



INSPECTION RECORD

This record, together with the Building Consent and approved plans, is to remain on the construction site at all times.

Project Location	TO BOOK AN INSPECTION PLEASE PHONE WDC BUILDING CONTROL	BCon17/0340
27A Peakes Rd WHANGANUI	ON 349 0001 AND QUOTE THE FOLLOWING APPLICATION NUMBER:	
Description of Work	Construct a new detached dwelling 146m2	
Applicant	Stonewood Homes (Wanganui) Limited PO Box 5108, Aramoho, Whanganui 4542	

SUMMARY OF CONDITIONS

Building Consent Number BCon17/0340

PIM Conditions

Code	Condition
	All work on the project must comply with the requirements of the NZ Building Code.
	A PIM only document is not an approval to build. A Building Consent is required before building work commences.
	W.D.C will follow up on building work not completed within two years of building consent issue.
	A Building Consent lapses and is of no effect if the building work has not been started within 12 months of the date of issue.
	If the building is public premises it may not be occupied until either a code compliance certificate or certificate for public use has been issued.
	Please note [Electrical, and Gasfitting subtrades do not form part of the building consent inspection process. However, Council is required to receive 'Energy Certificates' from both of these trades before issue of a Code Compliance Certificate].
PIM0oBLANK	The redundant vehicle crossing next to boundary with 29 Peakes Road shall be removed and the curb and channel reinstated to match the surrounding curb, channel and footpath.
PIM2bBLANK	The vehicle crossing shall be upgraded as per Sub14/003 Condition 3.
PIMCond	Advice Note: There are easements detailed on the certificate of title to convey electricity (Easement Instrument 10800048.4 and 10800048.3) which would be obstructed by the proposed new dwelling. I encourage you to look into your responsibilities and legal obligations with respect to these easements.
PIMconnect	Sanitary sewer joins to existing pipe in ROW to No 27 through an easement (approx 3m off left hand boundary in ROW). Existing water connection at 7.2m off the right hand boundary.



	New stormwater connection to kerb at 11.2m off the right hand boundary. Stormwater connection shall be arranged directly with a WDC approved connection installer through a Utility Connection Permit.
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Building Consent Conditions

<i>Code</i>	<i>Condition</i>

Your project's inspections are listed on the next page...



Please Note: A minimum of 48 hours notice is required for the booking of an inspection. The inspection record sheet and accompanying building consent documentation must be on site for use by the inspector at the time of the inspection.

All inspections are to be carried out by BCA Building Inspectors unless prior arrangements have been made by the BCA to have an approved qualified person inspect specific items (eg. Engineer). Inspections shall be carried out in accordance with the attached schedule of inspection types. It is the owner's responsibility to ensure all necessary inspections are carried out as required. Please contact WDC if you are unsure what requires inspection – do not cover or enclose any building work without inspection.

Note: Further inspections may incur additional cost at time of Code Compliance Certificate issue.

Inspections Record For Building Consent Number BCon17/0340								
<i>Inspection</i>	<i>When to Request</i>	<i>Date</i>	<i>Inspector</i>	<i>Complies with Code</i>	<i>Reinspect</i>	<i>Notes</i>		
CONCRETE SLAB INSPECTION	Prior to placing Concrete					Ribraft floor.		
FRAMING INSPECTION	When all framing is complete.							
Cladding Cavity Inspection	To inspect drainage cavity before cladding.							
POLYSTYRENE PLASTER- SUBSTRATE INSPECTION	Before covering up							
BUILDING PRELINE INSPECTION	Before Internal linings are fixed.							
POST LINE INSPECTION	To inspect fixings. Prior to covering up.							



FINAL BUILDING AND PLUMBING COMBINED INSPECTION	On Completion					Before requesting a final inspection please supply the following information: Application for Code Compliance Certificate. Memorandum of Restricted Building Work (RBW) for all required trades. As-Built Drainage plan. Energy certificate/s. Producer Statement (P/S3) for the cladding installation and product warranty.		
PLUMBING SUBFLOOR INSPECTION	Before covering up							
PLUMBING PRELINE INSPECTION	Before covering up							
SANITARY DRAINS INSPECTION	Before backfilling drains							
STORMWATER DISPOSAL INSPECTION	Before backfilling drains							



BUILDING CONSENT NUMBER BCon17/0340

Section 51, Building Act 2004

The building:

Street address of building:	Legal description of land where building is located:
27A Peakes Rd WHANGANUI	Lot 1 DP 510934 0.0369 Ha
Building name:	Location of building within site/block number:
Level/unit number:	

The owner:

Name of Owner:	
O'Leary Residential Limited	
Mailing address:	Street Address/registered Office:
9 Dickson Crescent Saint Johns Hill Whanganui 4500	9 Dickson Crescent Saint Johns Hill Whanganui 4500

Phone numbers:

Landline:		Mobile:	
Daytime:		After hours:	
Facsimile number:			
Email address:	anthony.oleary@stonewood.co.nz	Website:	

First point of contact for communications with the building consent authority:

Contact Person:	
Stonewood Homes (Wanganui) Limited	
Mailing address:	Street Address/registered Office:
PO Box 5108, Aramoho, Whanganui 4542	PO Box 5108, Aramoho, Whanganui 4542

Phone number:

Landline:		Mobile:	0274665108
Daytime:	3435007	After hours:	
Facsimile number:	3435002		
Email address:		Website:	

Building Work

The following building work is authorised by this consent

Project
Construct a new detached dwelling 146m2

<i>Intended Use</i>	<i>Intended Life</i>
Single Detached Residential	50+ Years
<i>Estimated Value (\$)</i>	
\$230000.00	

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty of responsibility under any other Act relating to or affecting the building (or proposed building). This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition or removal would be in breach of any other Act.



CONDITIONS OF BUILDING CONSENT NUMBER BCon17/0340

Section 51, Building Act 2004

This Building Consent is issued Subject to the following requirements:

Building Act 2004, Section 90:

Inspections by Building Consent Authorities

Agents authorised by the building consent authority for the purposes of this section are entitled, at all times during normal working hours or while building work is being done, to inspect

- (a) land on which building work is being or is proposed to be carried out; and
- (b) building work that has been or is being carried out on or off the building site; and
- (c) any building.

Informative notes:

- [Informative note: The Building Consent, conditions, inspection sheet, and approved plans must be kept on site at all times until completion of the project.]
- [Informative note: Failure to request inspections will risk the non-issuing of a code compliance certificate and the structure may be deemed non-complying.]
- [Informative note: Any inspection time required over and above that allowed may incur a further charge.]
- [Informative note: Under Section 52, a building consent lapses and is of no effect if the building work to which it relates is not commenced within 12 months after the date of issue.]
- [Informative note: Under Section 93, if the owner has not made application within 24 months, the BCA (Building Control Authority), must decide whether or not to issue a CCC (Code Compliance Certificate).]

Compliance Schedule:

A compliance schedule (CS) is not required for this building.

#Attachments

#Copies of the following documents are attached to this building consent:
#Project information memorandum number BCon17/0340'
#Inspection record

Signed for and on behalf of the Whanganui District Council

GJ Hoobin
Environmental Standards Team Leader

Date: 12 February, 2018



PROJECT INFORMATION MEMORANDUM NUMBER BCon17/0340

Section 34, Building Act 2004

Stonewood Homes (Wanganui) Limited
PO Box 5108
Aramoho
Whanganui 4542

<i>Project Location</i>	<i>Assessment Number/Legal Description</i>
27A Peakes Rd WHANGANUI	Lot 1 DP 510934 0.0369 Ha
<i>Category</i>	<i>Description of Work</i>
New Residential Dwellings - \$200001 & over	Construct a new detached dwelling 146m ²
<i>Intended Life</i>	<i>Estimated Value (\$)</i>
50+ Years	230000.00

This Project Information Memorandum is confirmation that the proposed work may be undertaken, subject to the provisions of the Building Act 2004 and any requirements of the Building Consent (number BCon17/0340), which has been granted.

This Project Information Memorandum is subject to the following conditions:

- The redundant vehicle crossing next to boundary with 29 Peakes Road shall be removed and the curb and channel reinstated to match the surrounding curb, channel and footpath.
- The vehicle crossing shall be upgraded as per Sub14/003 Condition 3.
- **Advice Note:** There are easements detailed on the certificate of title to convey electricity (Easement Instrument 10800048.4 and 10800048.3) which would be obstructed by the proposed new dwelling. I encourage you to look into your responsibilities and legal obligations with respect to these easements.
- Sanitary sewer joins to existing pipe in ROW to No 27 through an easement (approx 3m off left hand boundary in ROW).
- Existing water connection at 7.2m off the right hand boundary.
- New stormwater connection to kerb at 11.2m off the right hand boundary.
- Stormwater connection shall be arranged directly with a WDC approved connection installer through a Utility Connection Permit.
- All work on the project must comply with the requirements of the NZ Building Code.

101 Guyton Street
P O Box 637, Whanganui
Phone: (06) 349 0001
Fax: (06) 349 0000
Email: wdc@whanganui.govt.nz
Web: www.whanganui.govt.nz

Bcon17/0340 - WDC Approved Plans - 12/02/2018



**WHANGANUI
DISTRICT COUNCIL**
Te Kaunihera a Rohe o Whanganui

Signed for and on behalf of the Whanganui District Council

A handwritten signature in blue ink, appearing to read 'G. Hoobin'.

GJ Hoobin
Environmental Standards Team Leader

Date: 12 February, 2018



PROJECT INFORMATION MEMORANDUM NUMBER BCon17/0340

Section 34, Building Act 2004

Stonewood Homes (Wanganui) Limited
PO Box 5108
Aramoho
Whanganui 4542

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WHANGANUI
DISTRICT COUNCIL
Te Kaunihera a Rohe o Whanganui

Signed for and on behalf of the Whanganui District Council

A handwritten signature in blue ink, appearing to read 'G. Hoobin'.

GJ Hoobin
Environmental Standards Team Leader

Date: 12 February, 2018

8th February 2018

**Whanganui District Council
Building Control Department**

Dear Sir or Madam:

RE: 2nd Request for further information on Application.

Project Number:	BCon17/0340
Project Location:	27A Peakes Rd WHANGANUI
Project Description:	Construct a new detached dwelling 146m2

Refer to: "1st request for further information" letter.

Item 2: Easements - The supplied new site plan still does not show all easements crossing this property, please address. (Andrew Morris - Building Control Officer & Michael Beech Planning) See revised siteplan with easements added in based on title plan.

Item 10: Lintels - The lintel table on sheet 3 does not list the HySpan lintels required by the truss designer for W1, W5 and the cantilevered corner over W11, please address. (Andrew Morris - Building Control Officer) Sheet 3 lintel table revised to include truss designers Hyspans

**Item 13: Graphex cladding - Your reply refers only to a revised sheet 11, however this sheet did not contain the Graphex/weatherboard details as they are included in the specification (Resene sheets 70.03.10 and 70.04.10), please clarify if these pages are to be deleted. (Andrew Morris - Building Control Officer)
All house to be Graphex cladding, no weatherboard cladding. Plan notes have been amended to reflect this**

Yours sincerely

Jeremy Harrison

RECEIVED 9/02/2018

G. Young

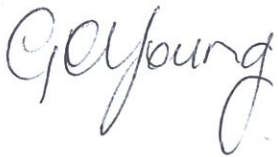
27 Peakes Road
St Johns Hill
Wanganui 4500

To Whom It May Concern,

I, Gail Young, current owner of 27 Peakes Road, give permission to O'Leary Residential to connect to my existing private sewer drain.

I understand this will become a private common drain, from the point of connection to the Wanganui District Council reticulation point.

Yours sincerely

A handwritten signature in cursive script that reads "Gail Young".

Gail Young
Of 27 Peakes Road
Wanganui

Dear Sir or Madam:

RE: 1st Request for further information on Application.

Project Number: **BCon17/0340**
 Project Location: **27 Peakes Rd WHANGANUI**
 Project Description: **Construct a new detached dwelling 146m2**

The building consent application is currently being assessed. Please supply the answers to the questions below in a specific covering letter clearly cross-referencing our questions and ensure that the altered drawings are also cross-referenced and have appropriate 'clouding' or **highlighting** etc. to clearly identify changes. All **RBW** questions **MUST** be addressed by the **LBP** responsible for the design and confirmation supplied. Please ensure that you quote this Project Number BCon17/0340 on all changes made to the documents.

1. Please provide elevation drawings for the attenuation tank drawn on the site plan.
 - Michael Beech, Graduate Resource Management Planner

Sheet 5 Revised

2. Please show all easements on the site plan. - (Michael Beech, Graduate Resource Management Planner) (Andrew Morris - Building Control Officer)

Sheet 2 Revised

3. Please provide a current certificate of title. - Michael Beech, Graduate Resource Management Planner

See attached

4. As stated in the Subdivision file 'Sub14/003', the vehicle crossing needs to be upgraded as per S224 Condition 3. Please provide details of this. - Michael Beech, Graduate Resource Management Planner

Stonewood Homes will upgrade the vehicle crossing as discussed and agreed onsite with Damien Wood

5. It is noted that there is a redundant vehicle crossing next to the boundary with 29 Peakes Road. Please demonstrate compliance with Chapter 12 of the District Plan. Please pay particular attention to Performance Standard 12.5.5 (d). - Michael Beech, Graduate Resource Management Planner

Curb and channel to be reinstated to match surrounding footpath area as per 12.5.5.d. Can we request this be completed once all heavy construction vehicles are no longer visiting the site before CCC issue

6. As per planning comments the vehicle crossing installed with first stage does not comply with Council Standards (Dave Kenning Roding)

As per previous, vehicle crossing to be upgraded

7. Please provide the engineer's design producer statement (PS1) for the Ribraft floor. (Andrew Morris - Building Control Officer)

See attached ribraft design

8. The foundation system specified in the notes on sheet 3 and the foundation detail on sheet 11 do not match the Ribraft floor design proposed, please clarify the floor slab design. (Andrew Morris - Building Control Officer).

Sheet 3, 7 and 11 Revised

9. Please clarify the exterior wall stud centres as the notes on sheet 3 specify 600mm and the notes on sheet 6 specify 400mm. (Andrew Morris - Building Control Officer)

Sheet 6 Revised

10. Point loaded lintels are outside the design parameters of NZS 3604:2011 and as such, please provide alternative design calculations for the point loaded lintels W1, W5 and W11. (Andrew Morris - Building Control Officer)

Sheet 3 Revised

11. The 'roof cladding and structure' note on sheet 3 details purlins which does not match the tile roof design proposed, please address. (Andrew Morris - Building Control Officer)

Sheet 3 Revised

12. The HWC is listed with wetback however no fire is detailed, please confirm if this is correct and a logfire is to be installed and if so, please provide documentation for the proposed fire. (Andrew Morris - Building Control Officer)

Sheet 3 Revised no logfire

Received Wednesday, 31 January 2018

13. Please clarify the cladding/s proposed as details for Graphex panel to weatherboard corners have been included. (Andrew Morris - Building Control Officer) **Sheet 11 Revised**

14. The smoke alarm location shown in the open plan kitchen area may be susceptible to false alarms and therefore requires relocating into the bedroom (please refer to NZBC clause F7/AS1 section 1.3.1 and NZS 4512:2010 section 405), please address. (Andrew Morris - Building Control Officer)

Sheet 3 Revised

15. Please confirm are new connections (Water/Stormwater/Wastewater) being installed for the new house or are the existing connections being shared with the house at rear. (Tony Hooper - Water/Wastewater Engineer)

A new stormwater connection may be required, the sewer is shared from the junction point as per Chris Gould's note below, a new water connection was created for the house at the rear, there is an existing dedicated water connection for this new dwelling

16. The drainage plan shows connection into the existing s/sewer drain in the ROW. This is a private drain, please provide written consent from the current owner of this drain to proceed with this proposal. The drain from the junction of the two properties will become a private common drain until the point of connection into WDC reticulation. (Chris Gould - BCO)

See attached written consent from owner

17. Please provide an access chamber (600mm minimum diameter) over the junction of the two private s/sewer drains where they meet the private common drain. (Chris Gould - BCO).

Sheet 2 Revised

18. Please provide s/sewer drain inverts at both the head of the drain and also at the point of connection into the existing drain. It appears you have provided a s/s invert on the stormwater connection and this will also need to be removed. (Chris Gould - BCO).

Sheet 2 and sheet 8 revised

Project Number **BCon17/0340**.

Yours sincerely

LBP designer

Jeremy Harrison LBP : 105491



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952

Search Copy



Identifier 783447
Land Registration District Wellington
Date Issued 06 July 2017

Prior References

WN46B/613

Estate Fee Simple
Area 369 square metres more or less
Legal Description Lot 1 Deposited Plan 510934

Proprietors

Helen Ruth Roberts

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

K40867 Certificate under Section 26 of the Housing Act 1955 that pipelines for the passage of sewage serve the within land - 10.1.1957 at 9:45 am

Subject to a right of way, a right to drain water and sewage, and a right to convey water, gas, telecommunications and computer media over parts marked A, B and C, and a right to convey electricity over part marked I, all on DP 510934 created by Easement Instrument 10800048.2 - 6.7.2017 at 10:49 am

Appurtenant hereto is a right of way, a right to drain water and sewage, and a right to convey water, gas, telecommunications and computer media created by Easement Instrument 10800048.2 - 6.7.2017 at 10:49 am

The easements created by Easement Instrument 10800048.2 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right to convey electricity over parts marked I, H, B and E on DP 510934 created by Easement Instrument 10800048.3 - 6.7.2017 at 10:49 am

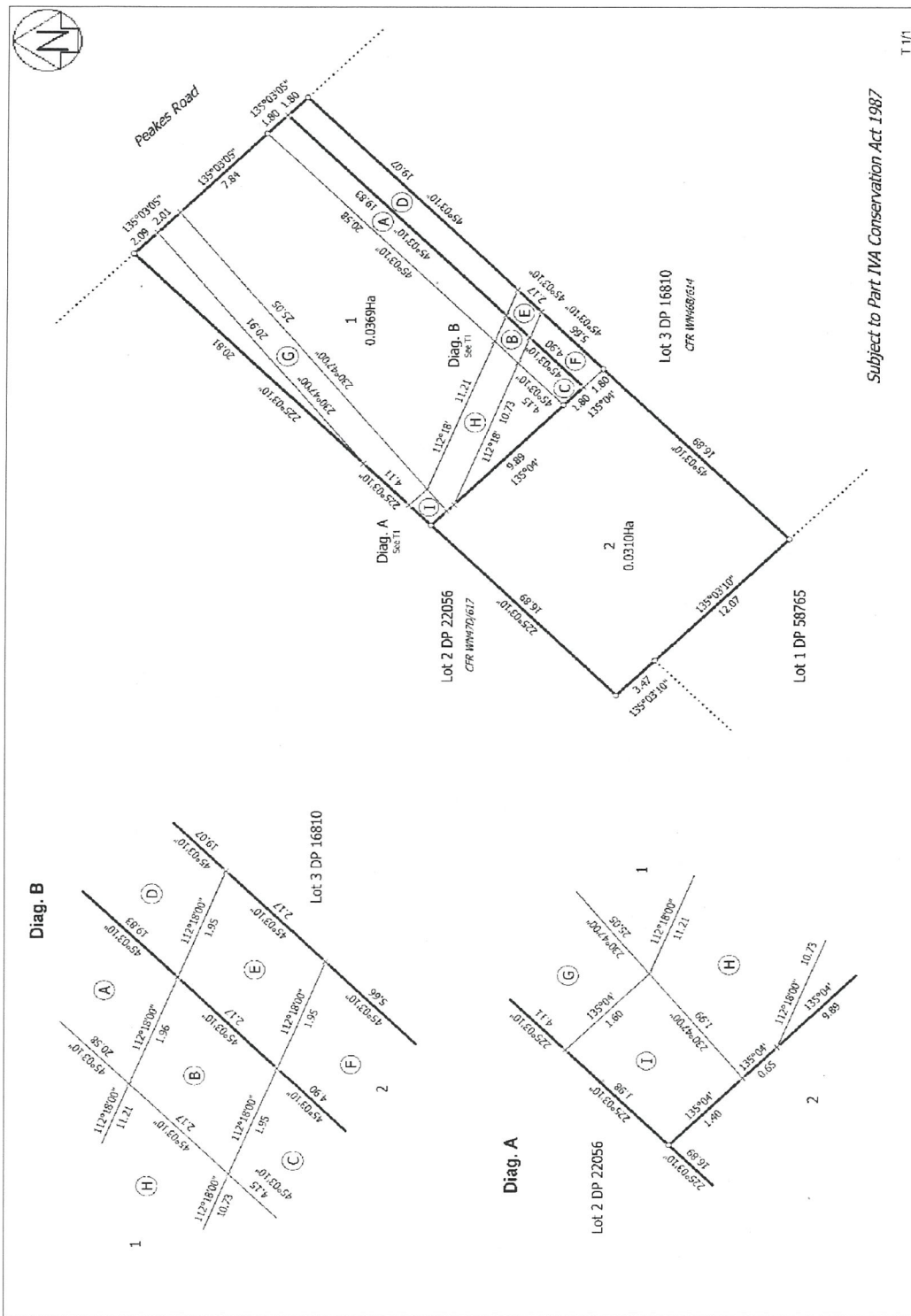
The easements created by Easement Instrument 10800048.3 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right (in gross) to convey electricity over parts G and I on DP 510934 in favour of Powerco Limited created by Easement Instrument 10800048.4 - 6.7.2017 at 10:49 am

Received Friday, 2 February 2018

Identifier

783447



T 1/1

Subject to Part IVA Conservation Act 1987

Land District: Wellington	Digitally Generated Plan Generated on: 20/07/2017 10:38am Page 3 of 3	Surveyor: Michael Robert O'Sullivan Firm: Harrison & O'Sullivan	Title Plan DP 510934 Deposited on: 6/07/2017
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Received Friday, 2 February 2018

Schedule / Memorandum

DP 510934

Memorandum of Easements			
Purpose	Servient Tenement	Shown	Dominant Tenement
Right of Way, Right to Drain Water & Sewage, Right to Convey Water, Gas and Telecommunications & Computer Media	Lot 1	A, B, C	Lot 2
	Lot 2	D, E, F	Lot 1
Right to Convey Electricity	Lot 1	I	Lot 2 hereon and Lot 2 DP 22056
		I, H, B, E	Lot 3 DP 16810

Schedule of Easements in Gross			
Purpose	Servient Tenement	Shown	Grantee
Right to Convey Electricity	Lot 1	G, I	Powerco Limited

AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

This form is approved by the Real Estate Institute of New Zealand Incorporated and by Auckland District Law Society Incorporated.

DATE:

VENDOR: Gail Catherine Young

PURCHASER: O'Leary Residential Limited

and/or nominee

The vendor is registered under the GST Act in respect of the transaction evidenced by this agreement and/or will be so registered at settlement:

Yes/No

PROPERTY

Address: 27 Peakes Road, Wanganui

Estate: **FEE SIMPLE** ~~LEASEHOLD~~ **STRATUM-IN-FREEHOLD** **STRATUM-IN-LEASEHOLD**
GROSSLEASE (FEE SIMPLE) **GROSSLEASE (LEASEHOLD)** (fee simple if none is deleted)

Legal Description: see attached plan

Area (more or less):

0.0369

Lot/Flat/Unit:

1

DP:

16810

Unique Identifier or CT:

Title plan 510934, title to issue

PAYMENT OF PURCHASE PRICE

Purchase price: \$80,000.00

Plus GST (if any) OR Inclusive of GST (if any)

If neither is deleted, the purchase price includes GST (if any).

GST date (refer clause 14.0):

Deposit (refer clause 2.0): \$ Nil

Balance of purchase price to be paid or satisfied as follows:

(1) By payment in cleared funds on the settlement date which is

OR

(2) In the manner described in the Further Terms of Sale.

Interest rate for late settlement: 10

% p.a.

CONDITIONS (refer clause 10.0)

Finance condition

LIM required: (refer clause 10.2)

Yes/No

Lender:

Building report required: (refer clause 10.3)

Yes/No

Amount required:

OIA Consent required: (refer clause 10.4)

Yes/No

Finance date:

Land Act/OIA date:

TENANCIES (if any)

Name of tenant:

Bond:

Rent:

Term:

Right of renewal:

SALE BY:

Private Treaty

Licensed Real Estate Agent under Real Estate Agents Act 2008

It is agreed that the vendor sells and the purchaser purchases the property, and the chattels listed in Schedule 1, on the terms set out above and in the General Terms of Sale and any Further Terms of Sale.

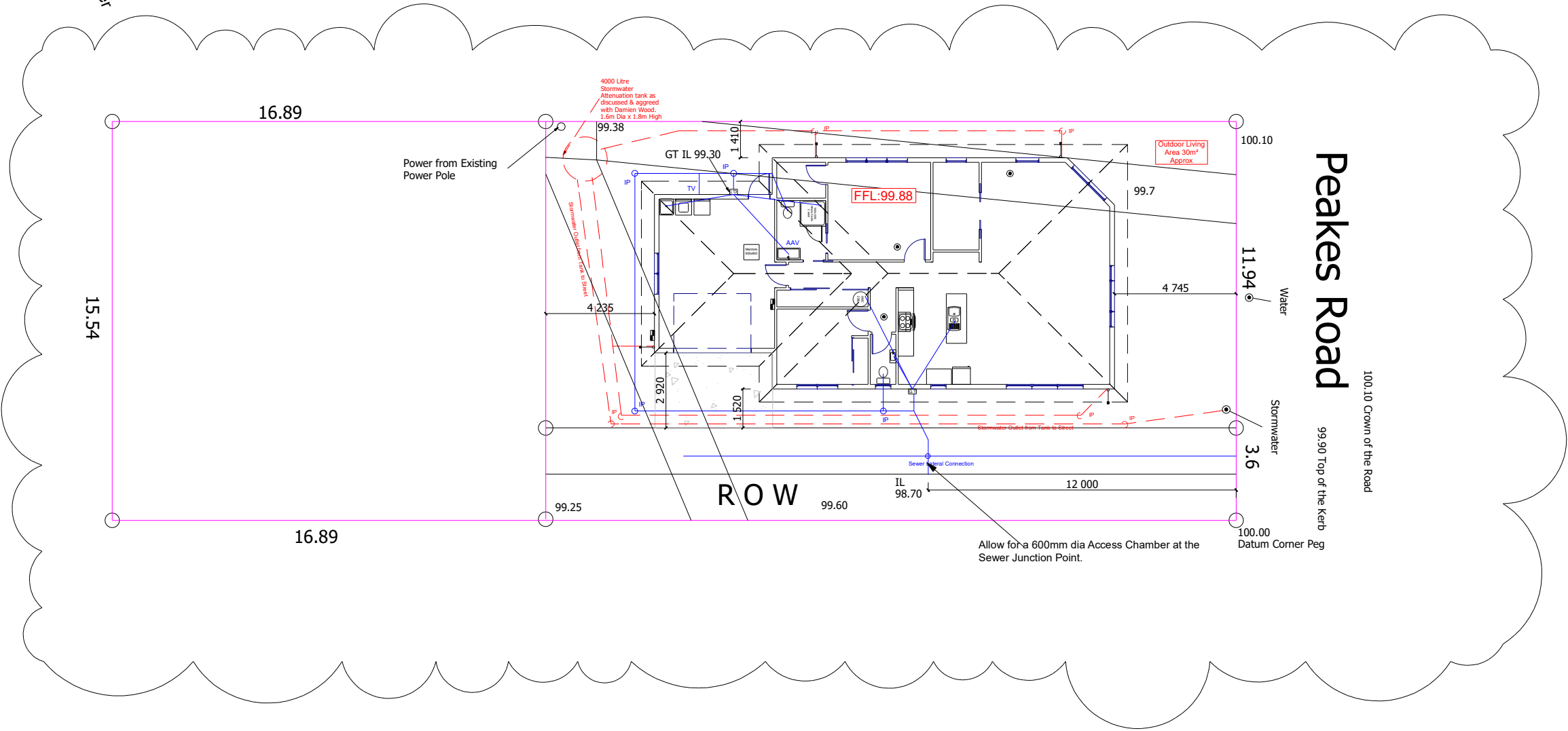
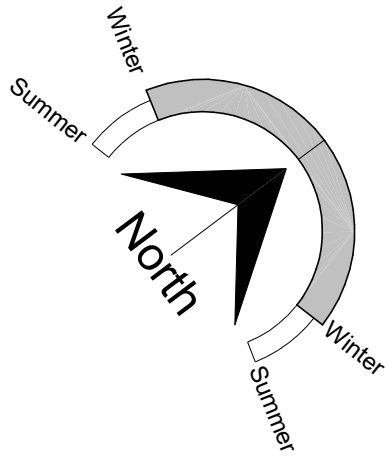
9



Drawing Index:	
Sheet 1 :	Cover Sheet/Location Plan
Sheet 2 :	Site Plan
Sheet 3 :	Floor Plan
Sheet 4 :	Elevations
Sheet 5 :	Elevations
Sheet 6 :	Cross Sections
Sheet 7 :	Foundation Plan
Sheet 8 :	Drainage Plan
Sheet 9 :	Bracing Plan
Sheet 10 :	Roof Plan
Sheet 11 :	Details
Sheet 12 :	Details

CONCEPT AMENDMENT TABLE			
#	Date	Revised By	Brief Description/Connect Log ID
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

STONEWOODHOMES Stonewood Homes Wanganui Ltd 24 Gibson Street, P.O Box 5108 Aramoho, Wanganui, New Zealand Phone: +64 6 343 5007 Fax: +64 6 343 5002 Email: jamie@stonewood.co.nz Website: www.stonewood.co.nz Client : Roberts Proposed Dwelling at: Lot 2 Dp 16810 27 Peakes Road St Johns Hill This plan is developed for the purchaser and is copyright to Stonewood Homes NZ Ltd. All dimensions and levels are to be checked and verified on site by contractor prior to commencement of any work		Signed		Date			
		COVER PAGE					
		Drawn By Jeremy Harrison		Checked By Jeremy Harrison		LBP # 105491	
		Standard Plan Special 1		Print Date 12/05/2017		Sales JO	
		Job Number 180007		Version A		Revision 1	
Version:				OF			
CONSENT				12			



LEGEND	
LEGEND.	
Sewer Pipe	———
S/W Pipe	- - - - -
Down Pipe	DP
Gully Trap	GT
Terminal Vent	TV

SITE PLAN NOTES	
Refer to Drainage Plan for specific drainage information	
Refer to sediment control plan in specification and implement where required.	
Driveway – By Stonewood Homes Ltd as shown OR Driveway and Sump not part of this building consent	
Convey surface water from sealed drive areas to an appropriate approved outfall.	
Dimensions are shown to cladding face	
Resource Consent Issues: 1/ No RC Issues known	

BUILDING AREA AND SITE COVERAGE	
Net Site Area =	371m²
Building Area (O/V) = (Includes covered areas)	146.8m²
Actual Site Coverage=	39.6%

SITE INFORMATION	
Zone	A
Wind	High
Earthquake	2
Durability	D
Snow	As Per Truss Design

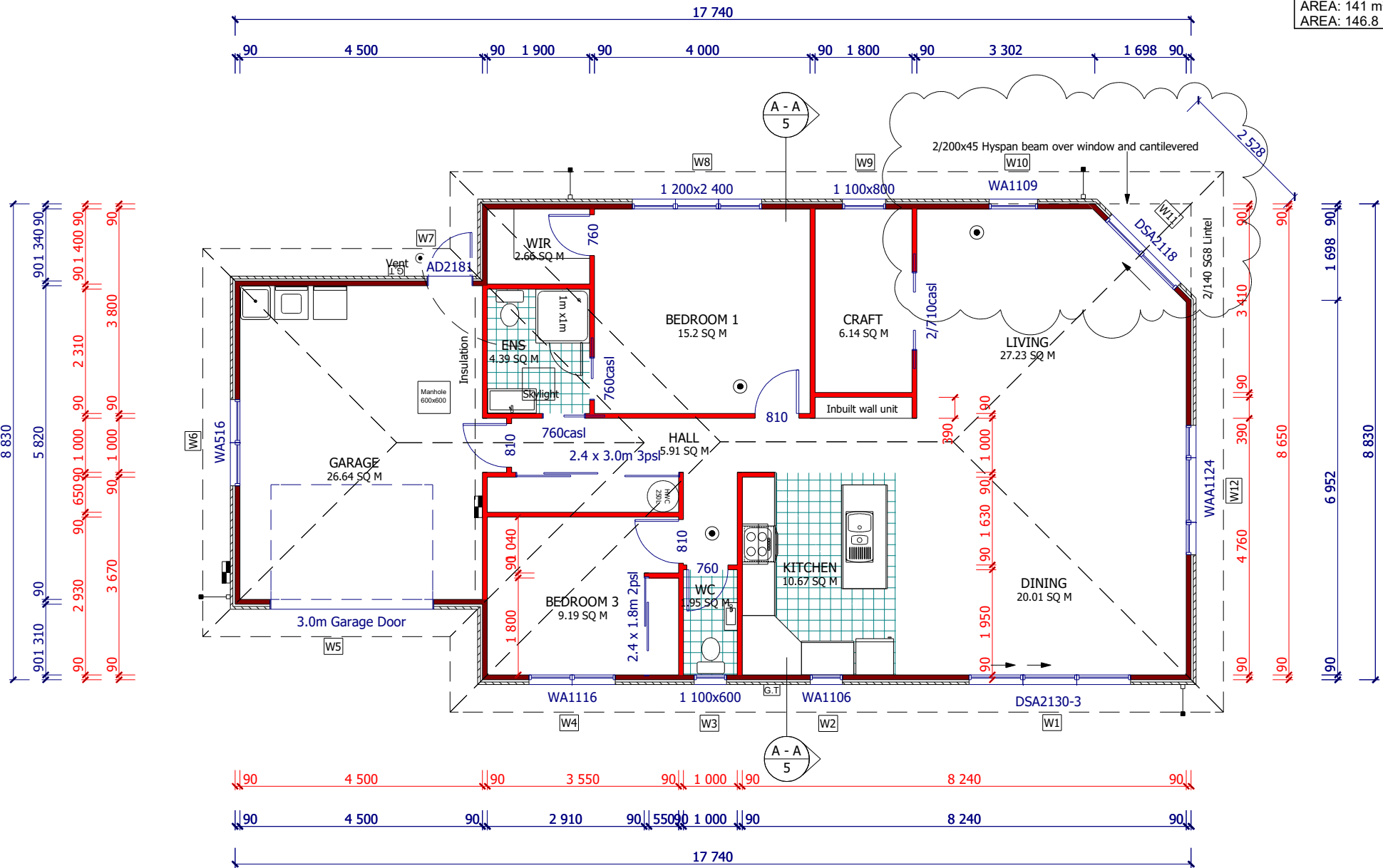
RECEIVED 9/02/2018

STONEWOOD HOMES		Client : Roberts Proposed Dwelling at: Lot 2 Dp 16810 27 Peakes Road St Johns Hill		Signed _____ Date _____	
Stonewood Homes Wanganui Ltd 24 Gibson Street, P.O Box 5108 Aramoho, Wanganui, New Zealand Phone: +64 6 343 5007 Fax: +64 6 343 5002 Email: jamie@stonewood.co.nz Website: www.stonewood.co.nz		This plan is developed for the purchaser and is copyright to Stonewood Homes NZ Ltd. All dimensions and levels are to be checked and verified on site by contractor prior to commencement of any work		SITE PLAN	
Drawn By Jeremy Harrison		Checked By Jeremy Harrison		LBP # 105491	
Standard Plan		Print Date 7/02/2018		Sales JO	
Special 1		Scale at A3 1:200		Job Number 180007	
		Version A		Revision 1	
				Sheet 2	
		Version: CONSENT		OF 12	



Key To Elevations

Bcon17/0340 - WDC Approved Plans - 12/02/2018



ROOF & WALL CLADDING

Roof - 25° Pressed Metal Tile Roof Profile
Walls - Resene Graphex Exterior on a 20mm Cavity
Feature -

BUILDING AREA

AREA: 141 m² O/F
AREA: 146.8 m² O/V

GENERAL FLOOR PLAN NOTES

SMOKE ALARMS
Smoke Alarms to be fitted within 3.0m of sleeping areas and on Escape routes, as indicated on plan. Refer to Construction Schedule (Page 2 & 3) in the Specification for more information.

MISCELLANEOUS:
Dimensions shown are to the frame, GIB thickness not shown.
Refer to Construction Schedule (Page 2 & 3 of Specification) for additional construction information.
Entry through external doors
Mechanical ventilation
Air Seals to have PEF rod & low expansion foam
All windows and doors centered in room unless shown otherwise

FOUNDATION SYSTEM
Rib Raft Foundation.

WALL FRAMING -designed to high wind zone
Stud Height: 2420 mm
Exterior Walls: 90x45mm studs @ 600 mm crs
Interior Loadbearing wall: 90x45mm studs @ 600 mm crs
Dwangs Ext: 90x45 @ 800 crs
Non loadbearing: 90x45mm studs @ 600 mm crs
Dwangs Int: 90x45mm @ 1350mm crs max

LINTELS AND BEAMS
Lintels and beams can be found on the Truss Design

BUILDING WRAP
Watertight Building Wrap, refer to manufacturers specifications attached

DOORS
Internal Height: 1980mm

INSULATION
Wall - Pink Batts Ultra R2.4 Wall Batts
Ceiling - Pink Batts R3.6 Ceiling Batts

WALL AND CEILING LININGS
Wall - Standard 10mm GIB (unless required for bracing)
Ceiling - Standard 13mm GIB
13mm GIB Aqualine (bathrooms)
10mm GIB Aqualine
Bathroom - Square
Corner Finish - Square
Ceiling Finish - Gib Cove Classic Cornice 55mm

FLOOR FINISHES
Carpet, Tiles

INTERIOR AND EXTERIOR JOINERY
Joinery - Double Glazed Vantage
Standard Aluminium Joinery
Interior - Shelf and rail to wardrobes
Wardrobe Mirrors

WATER HEATING
Electric HWC

KITCHEN COOKTOP
Electric Hob

ROOF CLADDING AND STRUCTURE
Battens - 50x40mm SG8 H1.2 Battens @ 370rs

GUTTER/FASCIA/DOWNPIPES/SOFFITS
Gutter - Metalcraft Metalline Quad Gutter
Fascia - Metalcraft Metalline 185 Fascia
Downpipes - Marley PVC Round 80mm
Soffits - Hardiflex 4.5mm

	Height	Width		GT	Lintel size
1	2.14	3.00	6.42	GT	2/200x45 Hyspan
2	1.10	0.60	0.66		2/90x45
3	1.10	0.60	0.66		2/90x45
4	1.10	1.60	1.76		2/140x45
5	2.14	3.00	6.42	GT	2/200x45 Hyspan
6	0.50	1.60	0.80		2/140x45
7	2.14	0.80	1.71		2/90x45
8	1.20	2.40	2.88		2/240x45
9	1.10	0.80	0.88		2/90x45
10	1.10	0.90	0.99	GT	2/200x45 Hyspan
11	2.14	1.80	3.85		2/190x45
12	1.10	2.40	2.64		2/240x45

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Website: www.stonewood.co.nz

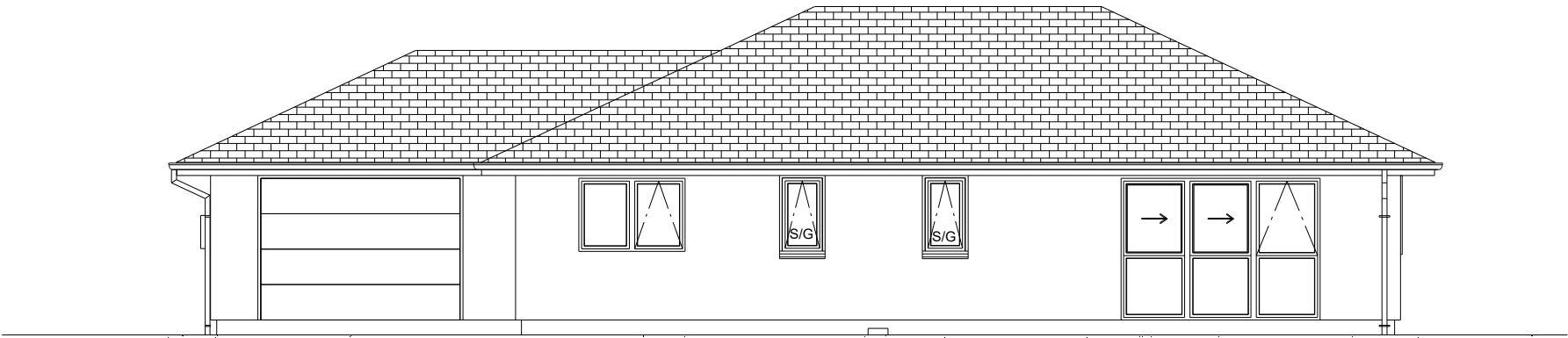
Client :
Roberts
Proposed Dwelling at:
Lot 2 Dp 16810
27 Peakes Road
St Johns Hill

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Signed		Date	
FLOOR PLAN			
Drawn By Jeremy Harrison		Checked By Jeremy Harrison	
Standard Plan		LBP # 105491	
Special 1		Print Date 7/02/2018	Sales JO
Job Number 180007		Version A	Scale at A3 1:100
Revision 1		Sheet 3	
Version: CONSENT			OF 12

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RISK MATRIX ASSESSMENT		
ELEVATION A		
RISK CRITERIA	RISK	SCORE
Wind Zone	High	1
Number of Stories	Low	0
Roof Wall Junction	Low	0
Eaves Width	Low	0
Building Envelope	Low	0
Decks & Balconies	Low	0
Total		1

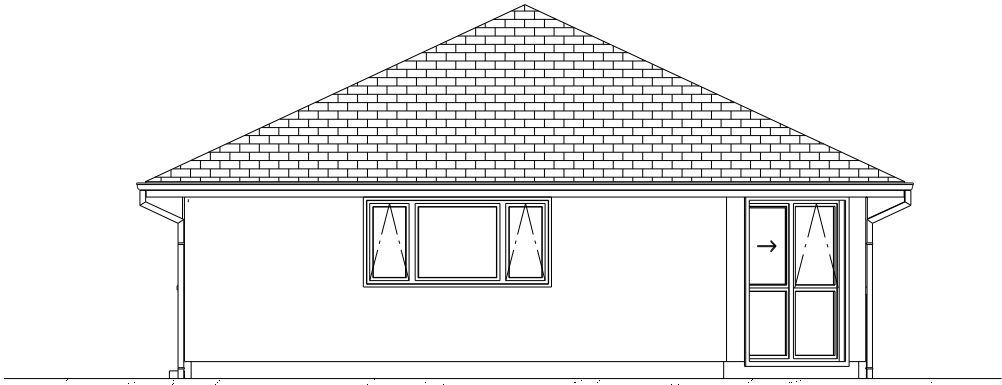


 **ELEVATION A**
1:100

GENERAL ELEVATION NOTES
Air Barrier to unlined wall and gables, refer to the Construction Schedule in the Specification for type.
This sheet to be read in conjunction with the Risk Matrix in specification.
Driveway to fall from 20mm max below garage rebates (By Others).
Key SS: Security Stay SG: Safety Glass

LEGEND
1 - Pressed Metal Tile Roof over roof underlay
2 - Resene Graphex Exterior on a 20mm cavity
3 - Metalcraft Fascia and Gutter System
4 - Aluminum Joinery
5 - 80mm Dia PVC Downpipe's

RISK MATRIX ASSESSMENT		
ELEVATION B		
RISK CRITERIA	RISK	SCORE
Wind Zone	High	1
Number of Stories	Low	0
Roof Wall Junction	Low	0
Eaves Width	Low	0
Building Envelope	Low	0
Decks & Balconies	Low	0
Total		1

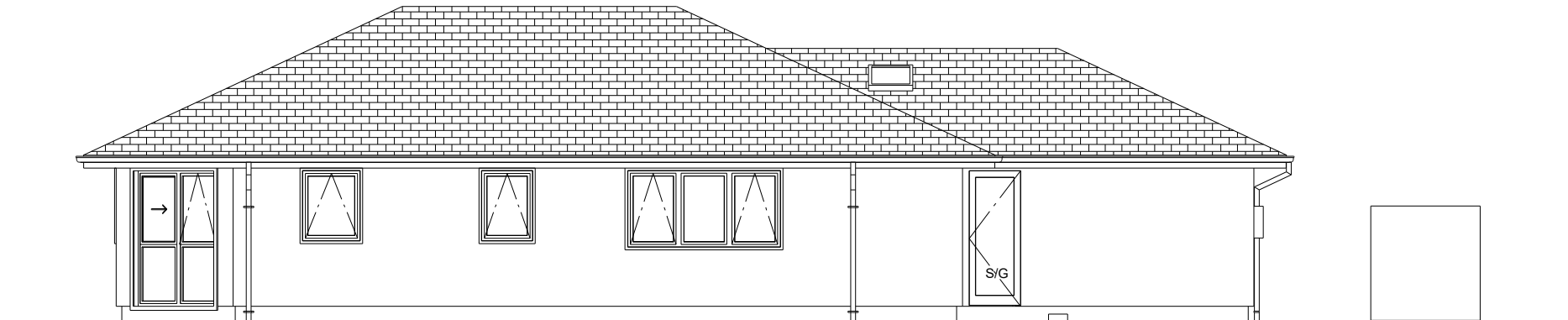


 **ELEVATION B**
1:100

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	Proposed Dwelling at: Lot 2 Dp 16810 27 Peakes Road St Johns Hill	Drawn By Jeremy Harrison	Checked By Jeremy Harrison		LBP # 105491
		Standard Plan	Print Date 7/02/2018	Sales JO	Scale at A3 1:100
		Special 1	Job Number 180007	Version A	Revision 1
					Sheet 4
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RISK MATRIX ASSESSMENT		
ELEVATION C		
RISK CRITERIA	RISK	SCORE
Wind Zone	High	1
Number of Stories	Low	0
Roof Wall Junction	Low	0
Eaves Width	Low	0
Building Envelope	Low	0
Decks & Balconies	Low	0
Total		1

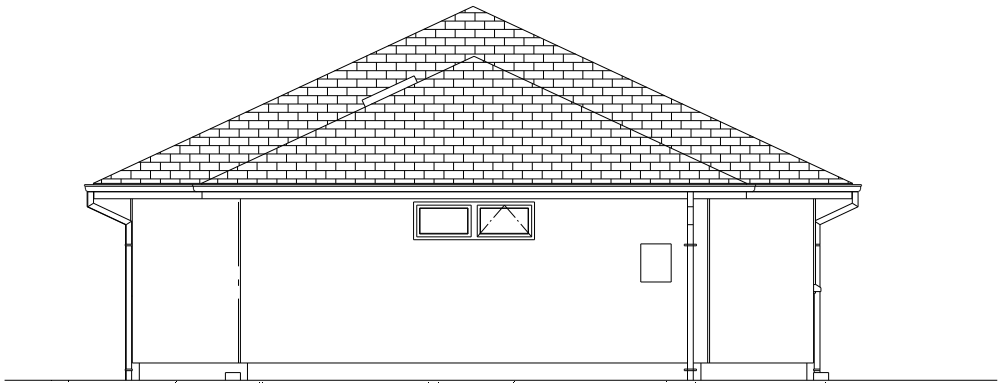


ELEVATION C
1:100

GENERAL ELEVATION NOTES
Air Barrier to unlined wall and gables, refer to the Construction Schedule in the Specification for type.
This sheet to be read in conjunction with the Risk Matrix in specification.
Driveway to fall from 20mm max below garage rebates (By Others).
Key SS: Security Stay SG: Safety Glass

LEGEND
1 - Pressed Metal Tile Roof over roof underlay
2 - Resene Graphex Exterior on a 20mm cavity
3 - Metalcraft Fascia and Gutter System
4 - Aluminum Joinery
5 - 80mm Dia PVC Downpipe's

RISK MATRIX ASSESSMENT		
ELEVATION D		
RISK CRITERIA	RISK	SCORE
Wind Zone	High	1
Number of Stories	Low	0
Roof Wall Junction	Low	0
Eaves Width	Low	0
Building Envelope	Low	0
Decks & Balconies	Low	0
Total		1

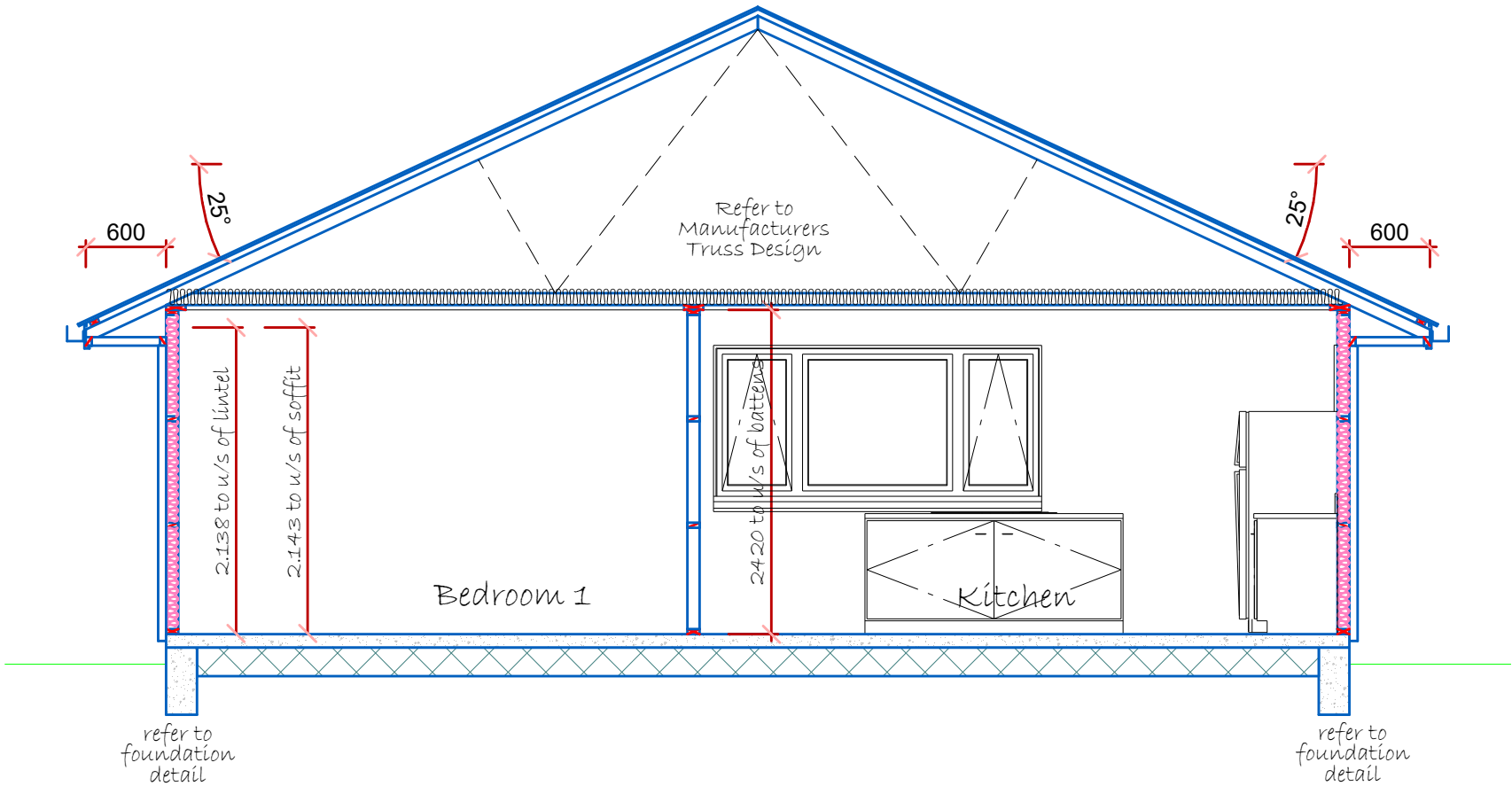


ELEVATION D
1:100

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		Drawn By Jeremy Harrison		Checked By Jeremy Harrison		LBP # 105491
		Standard Plan		Print Date 7/02/2018	Sales JO	Scale at A3 1:100
		Special 1				
		Job Number 180007		Version A	Revision 1	Sheet 5
	Version: CONSENT		OF 12			
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Cross Section A- A

GENERAL ELEVATION NOTES
Refer to the Construction Schedule (Page 2 & 3) in the Specification for further information.

LEGEND
Refer to the Construction Schedule (Page 2 & 3) in the Specification for sizing of Building Elements. General Notes:
1 - Pressed Metal Tile roof on self supporting ThermoKraft 215 roof underlay on 50x40mm SG8 H1.2 Battens @ 370rs
2 - Metalcraft fascia & quad gutter system with 4.5mm Hardies soffit lining on 70x35mm H1.2 eaves bearers on edge fixed to ribbon board.
3 - 4.5mm Hardies Soffit lining on 90x45mm H1.2 SG8 Ceiling Joists @ 900crs fixed using JH47x90 joist hangers
4 - 13mm Standard GIB ceiling lining to underside of Rondo metal ceiling battens @ 600 crs with R3.6 Pink Batts insulation.
5 - Resene Graphex system on a 20mm cavity (refer to specification) Watergate Plus building wrap on stud framing with R2.4 Ultra Pink Batts insulation & 10mm Std. GIB wall lining (Aqualine to wet areas).
7 - Bottom Plate fixings: Lumberlok bottom plate fixing anchors as per manufacturers spec's @ 900mm crs on all external walls and within 150mm of each end of the plate. 75mmx4mm dia shot fired fasteners @ 600mm crs and within 150mm of each end of the bottom plate to interior load bearing walls. DPC between bottom plate & floor slab (Refer to Mi Tek spec's attached for specific bottom plate fixing details required for bracing lintels)
8 - Studs 90x45 @ 600crs SG8, Dwangs @ 800crs. (exterior walls) unless otherwise stated
9 - Studs 90x45 @ 600crs SG8, Dwangs @ 800crs. 2 min. (interior loadbearing & non-loadbearing walls) unless otherwise stated
10 -20MPa Standard 3604 Alternative Foundation slab. Refer to foundation details on sheet 14.
11 -20 MPa 100mm conc floor slab over DPM on sand blinding (refer specification) over compacted AP40 hardfill. Super ductile mesh to entire slab.

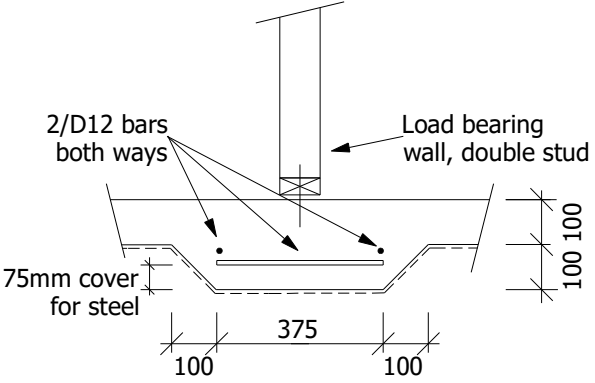
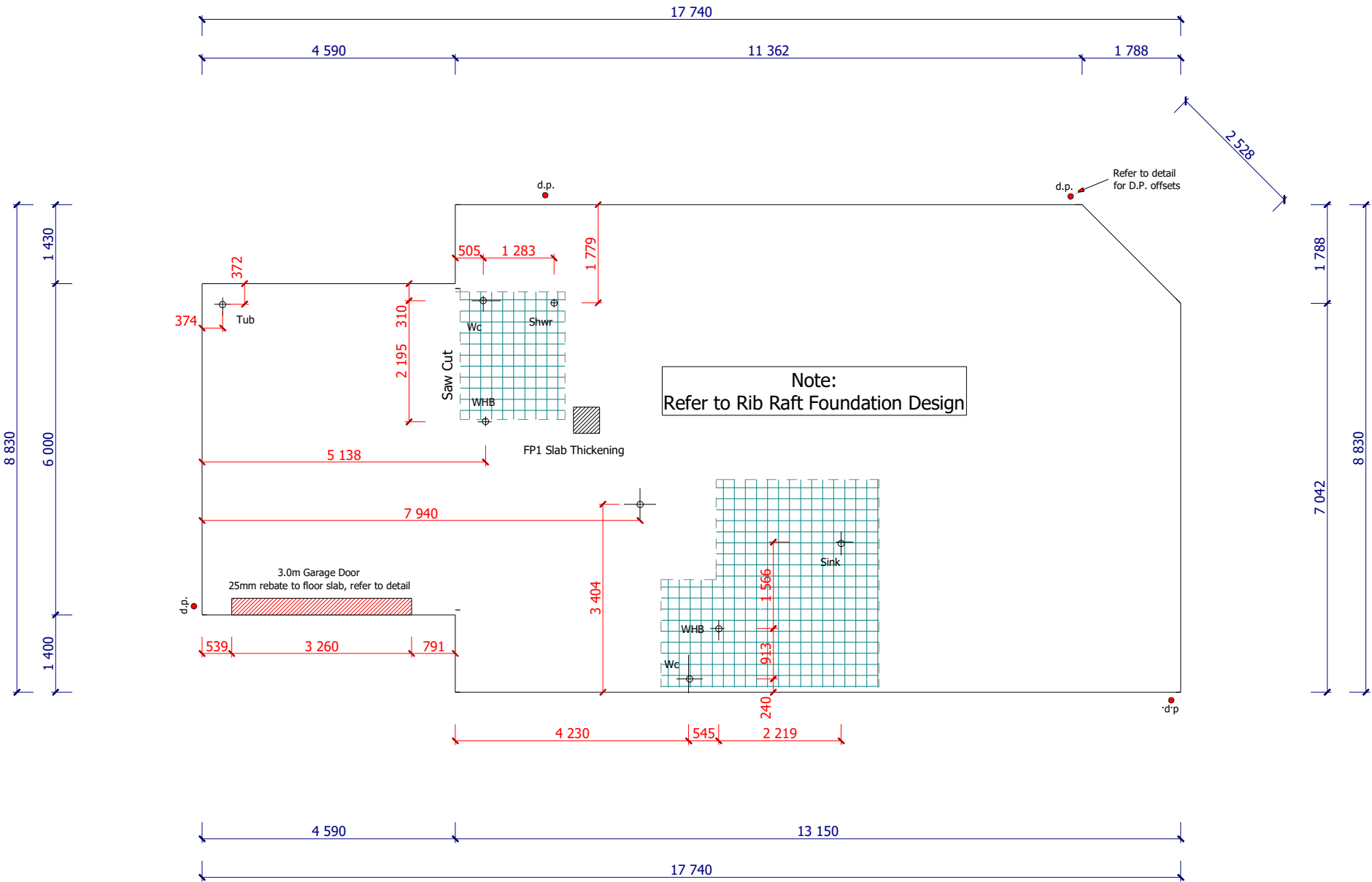
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PROTECTION OF FIXINGS
Fixings shall comply with NZS 3604:2011 Section 4 Durability Tables 4.1-4.3
CONCRETE STRENGTH
All concrete to comply with NZS3604:2011 Section 4 Durability Clause 4.5.2
TIMBER GRADE
Timber members specified on these drawings are to be a minimum of SG8 strength graded as per NZS3604:2011

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	Proposed Dwelling at: Lot 2 Dp 16810 27 Peakes Road St Johns Hill	Drawn By Jeremy Harrison	Checked By Jeremy Harrison	LBP # 105491	
		Standard Plan	Print Date 7/02/2018	Sales JO	Scale at A3 1:50
		Job Number 180007	Version A	Revision 1	Sheet 6
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GENERAL FOUNDATION NOTES
1) All dimensions over foundation face. 5) Supplementary reinforcing to internal corners to comply with NZS 3604:2011 clause 7.5.8.6.4. 6) W/C location indicated on plan has assumed a 160mm offset from internal frame line, please consult manufacturer's documentation to confirm offset. Contractor to consult manufacturer's documentation to determine the correct location for all wastes positioned through floor slabs. 7) Gully trap positions indicated on ground floor plan. 8) Earth bar to be bonded to the reinforcing mesh 9) Refer to Truss design for exact location of slab thickenings

BOTTOM PLATE FIXING
Bottom Plate fixings: Lumberlok bottom plate fixing anchors as per manufacturers spec's @ 900mm crs on all external walls and within 150mm of each end of the plate. 75mmx4mm dia shot fired fasteners @ 600mm crs and within 150mm of each end of the bottom plate to interior load bearing walls. DPC between bottom plate & floor slab (Refer to Mi Tek spec's attached for specific bottom plate fixing details required for bracing lintels)



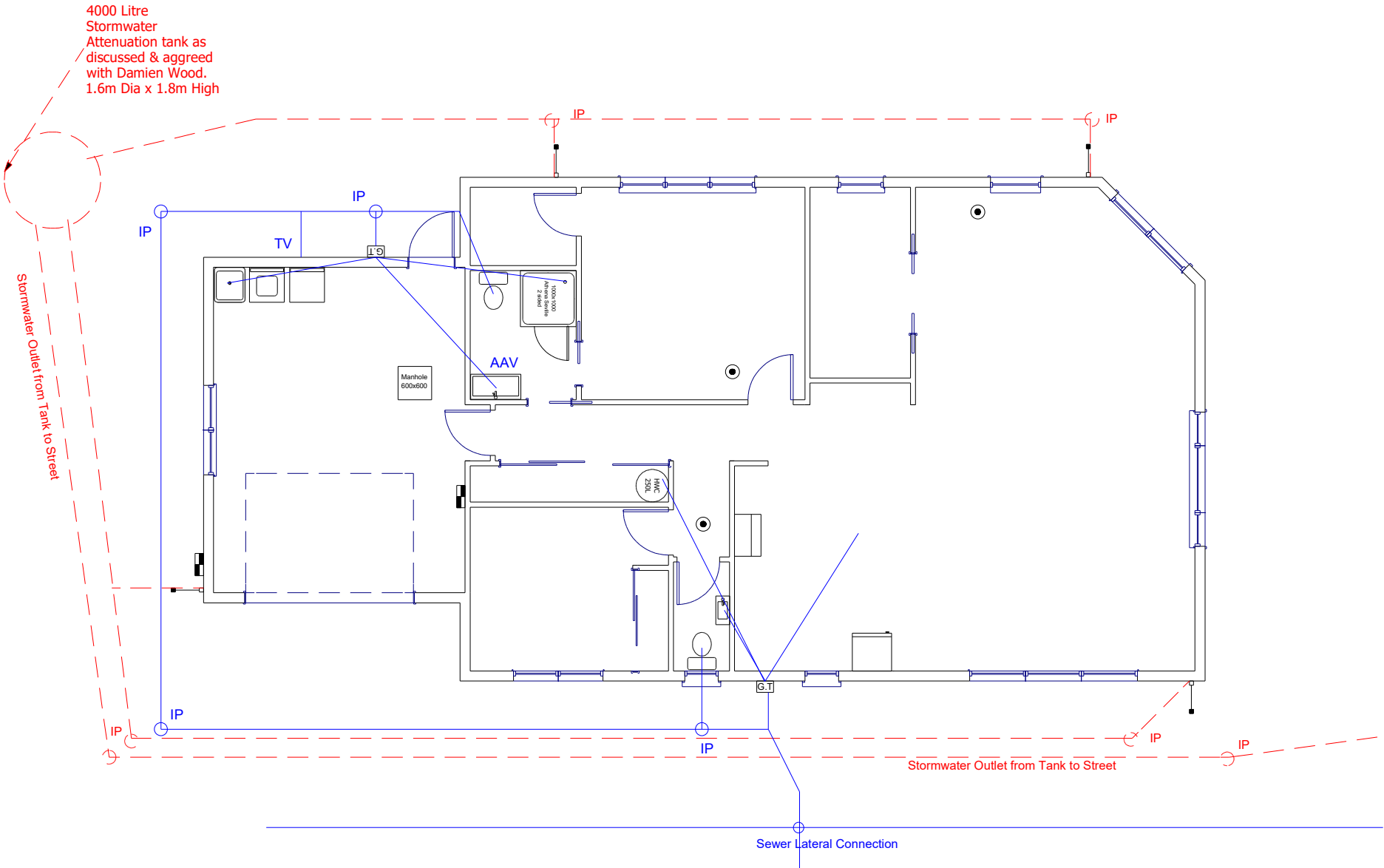
Slab Thickening Type FP1
Scale 1:20

Received Wednesday, 31 January 2018

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		Drawn By Jeremy Harrison		Checked By Jeremy Harrison		LBP # 105491
		Standard Plan		Print Date 13/07/2017	Sales JO	Scale at A3 1:100
		Special 1				
		Job Number 180007		Version A	Revision 1	Sheet 7
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LEGEND.	
Sewer Pipe	_____
S/W Pipe	-----
Down Pipe	DP
Gully Trap	GT
Terminal Vent	TV
Vent	V
Inspection Point	IP
Air Admittance Valve	AAV

Drainage Schedule	NZBC G13	
(Drainage as per Schedule unless specified otherwise)		
Kitchen		
Sink:	Ø65mm @1:40	(3 discharge units)
Bathrooms		
Vanity:	Ø40mm @ 1:40	(1 discharge units per basin)
Shower:	Ø40mm @1:40	(2 discharge units)
Bath:	Ø40mm @1:40	(4 discharge units)
WC:	Ø100mm @1:40	(4 discharge units)
Laundry		
Sink:	Ø65mm @1:40 min	(5 discharge units)
Main Foulwater Drain	Ø100mm @1:60	
Stormwater Drain	Ø100mm @1:60 (1:120max)	
Terminal Vent	Ø80mm	
Vent	Ø50mm	
Heatpump	Drain over GT	
Hot water Cylinder	Drain over GT	
Services	To existing connections	



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Proposed Dwelling at:
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27 Peakes Road
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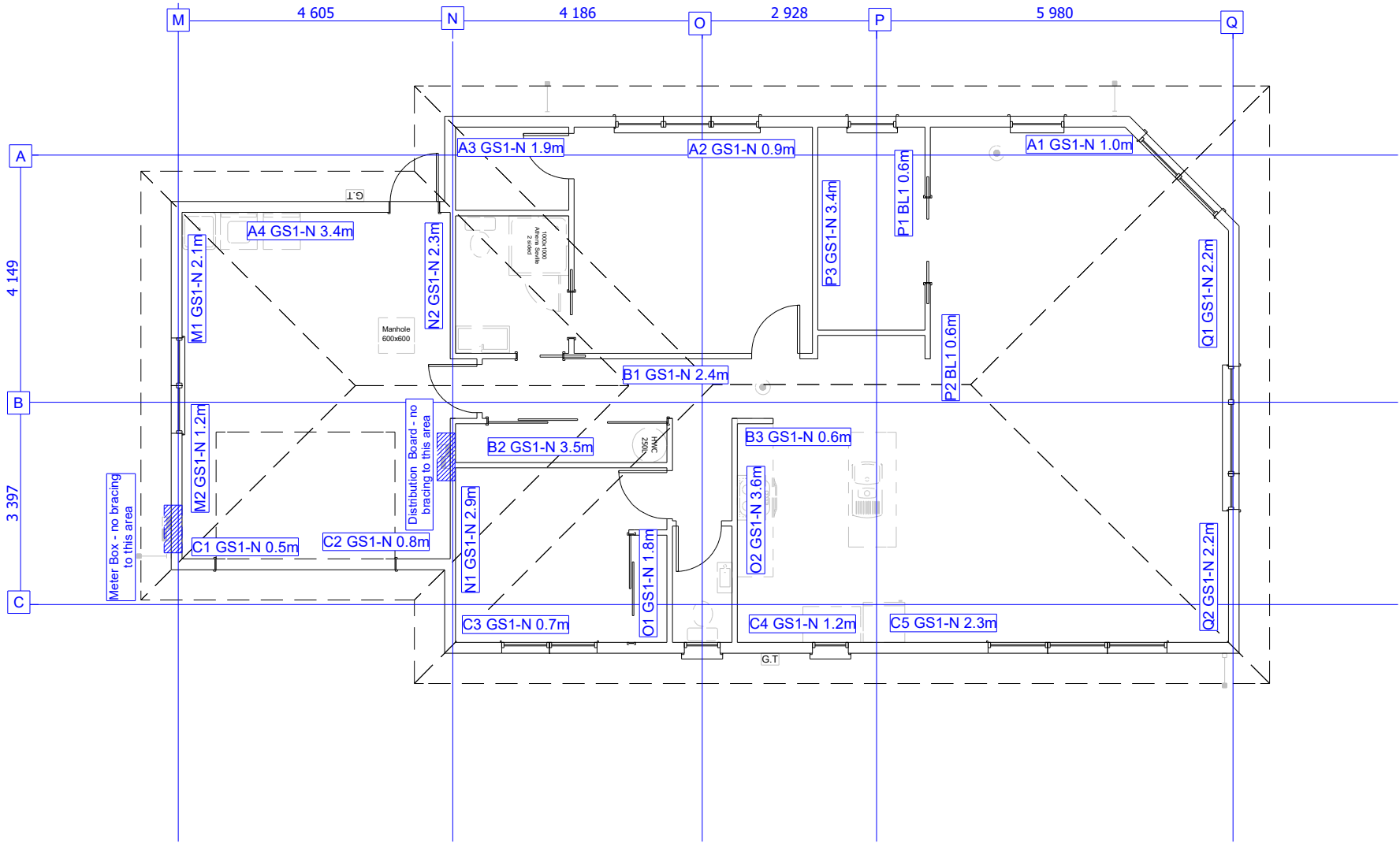
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Signed _____ Date _____

DRAINAGE PLAN

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Standard Plan	Print Date 31/01/2018	Sales JO
Scale at A3 1:100	Version A	Revision 1
Job Number 180007	Sheet 8	OF

Version: 12
CONSENT



GENERAL BRACING NOTES

Bracing plan to be read in conjunction with supplementary bracing calculations

Refer to the supporting documents in the specification for purlin/batten fixing, truss fixing, stud to top plate fixing & lintel fixing schedules.

To be read in conjunction with minimal length bracing detail TAJ002AWA

BRACING SYSTEM

Wall bracing designed in accordance with NZS 3604:2011 & GIB Ezybrace system

Designed to:
Wind: High
Earthquake: 2

LEGEND

A — Brace Line Label
← Brace Length
← Brace Type
M1 EPBS 1.1m ← Brace Number

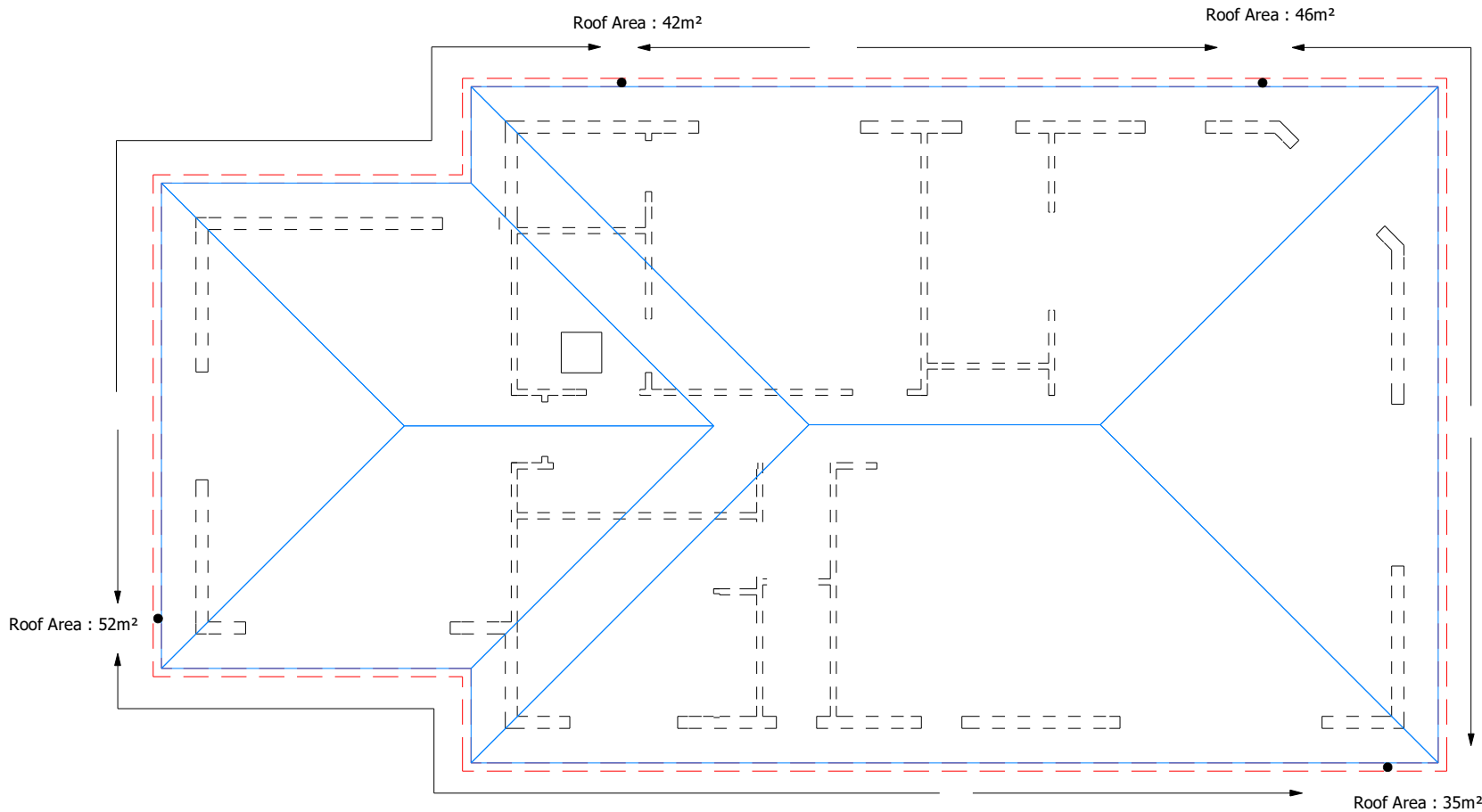
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24 Gibson Street, P.O Box 5108
Aramoho, Wanganui, New Zealand
Phone: +64 6 343 5007
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Client :
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Proposed Dwelling at:
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St Johns Hill

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Signed	Date			
BRACING PLAN				
Drawn By Jeremy Harrison	Checked By Jeremy Harrison	LBP # 105491		
Standard Plan	Print Date 12/05/2017	Sales JO	Scale at A3 1:100	
Job Number 180007		Version A	Revision 1	Sheet 9
Version: CONSENT				OF 12



GENERAL ROOF PLAN NOTES
Refer to the Construction Schedule (Page 2 & 3) in the Specification and the manufacturer's specification attached for the gutter and down pipe rainfall catchment area calculations.
RPB - Roof Plane Bracing as per NZS:3604 (Figure: 10.22)
LSB - Lumberlok Strip bracing as per Lumberlok Roof Bracing Specification

ROOF CLADDING
Roof - 25° Pressed Metal Tile Roof Profile on Thermakraft 215 roof underlay

TRUSS FIXINGS
Refer to the Truss design for truss fixings

TOP PLATE FIXING
Use Lumberlock top plate fixing chart attached to the main specifications to determine top plate fixings

GUTTERS
Use Metalcraft Metalline Quad Gutter As per NZ Metal Roof and Wall Cladding Code of Practice Version 2 section 8 the above gutter with a cross sectional area of 5550mm² can collect up to 63.06m² of 0-25° roof plan area. Refer to the specifications for exact calculations.

TIMBER GRADE
Timber members specified on these drawings are to be a minimum of strength of SG8 graded as per NZS3604:2011

PROTECTION OF FIXINGS
Fixings shall comply with NZS 3604:2011 Section 4 Durability Tables 4.1-4.3

VALLEY BOARDS
Thickness: 19mm
Timber Treatment: H1.2

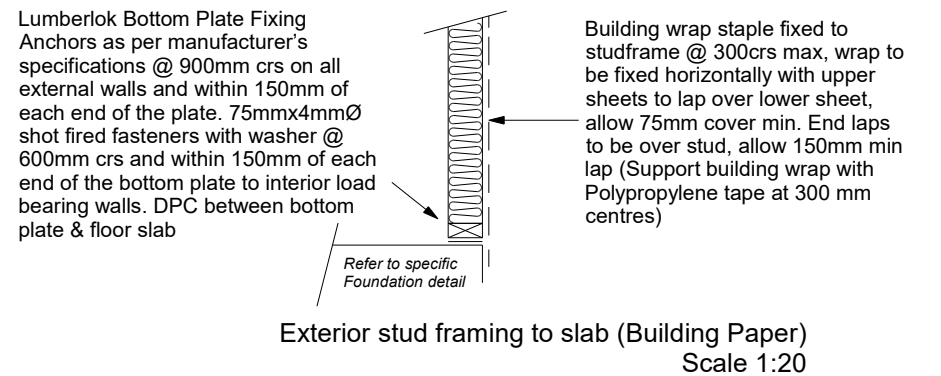
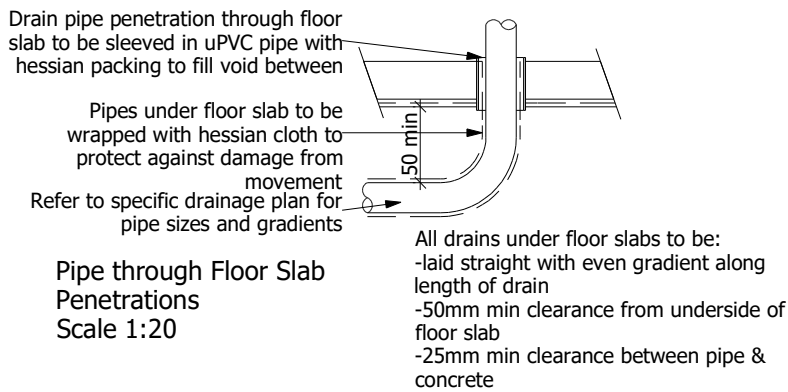
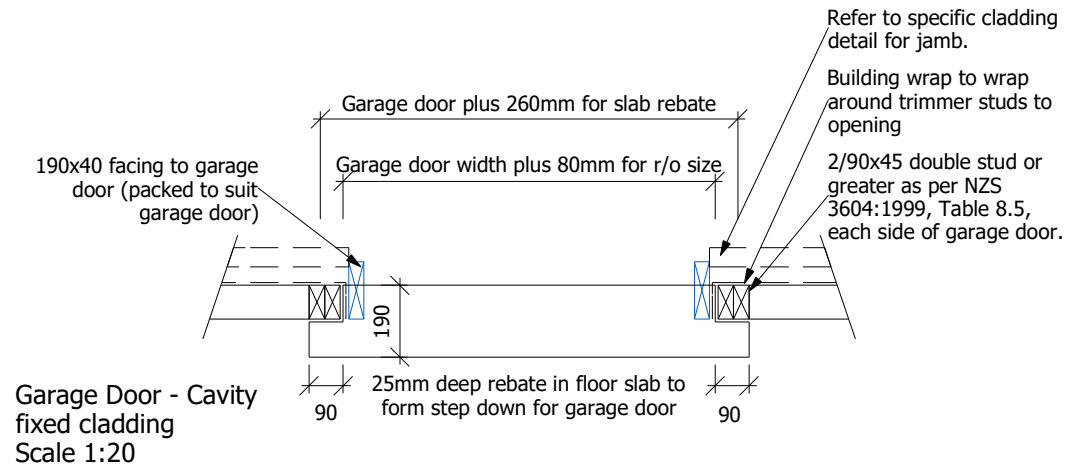
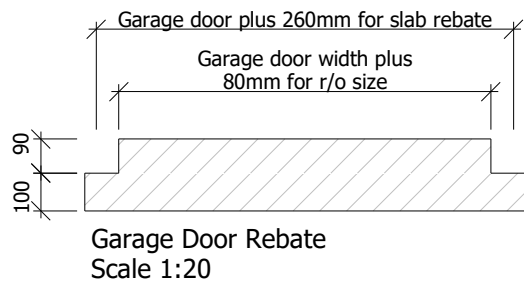
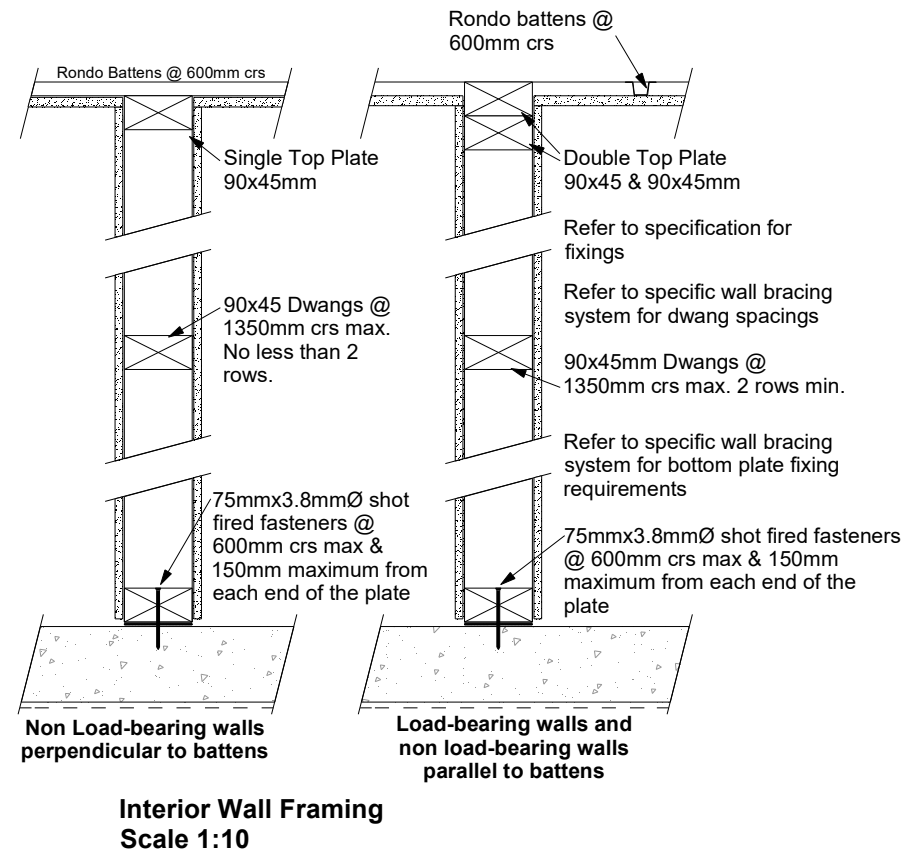
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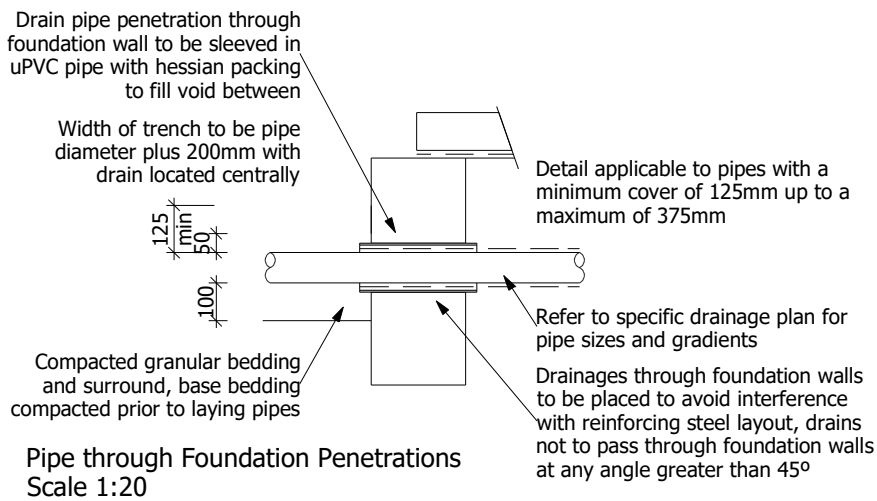
Client :
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St Johns Hill

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Signed	Date			
ROOF PLAN				
Drawn By Jeremy Harrison	Checked By Jeremy Harrison	LBP # 105491		
Standard Plan	Print Date 12/05/2017	Sales JO	Scale at A3 1:100	
Special 1	Version 180007	Revision A	Sheet 1	
Version: CONSENT				OF 12



Note:
Refer to Specific Cladding Details



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		Drawn By Jeremy Harrison		Checked By Jeremy Harrison		LBP # 105491		
		Standard Plan		Print Date 13/07/2017		Sales JO	Scale at A3 varies	
		Special 1		Job Number 180007		Version A	Revision 1	Sheet 11

Client :
Roberts
Proposed Dwelling at:
Lot 2 Dp 16810
27 Peakes Road
St Johns Hill

Signed	Date		
DETAILS			
Drawn By Jeremy Harrison	Checked By Jeremy Harrison	LBP # 105491	
Standard Plan	Print Date 12/05/2017	Sales JO	Varies at A3
Special 1	Version A	Revision 1	Sheet 12
Version: CONSENT			OF 12

Form 2A

Memorandum from licensed building practitioner: Certificate of design work
Section 45 and Section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING SITE

27 Peakes Road
St Johns Hill

THE OWNER

Helen Roberts	
Mailing address:	
Suburb:	PO Box/Private Bag:
Town/City: Wanganui	Postcode:
	Email address:

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies (✓)	
()	sole designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project
(✓)	lead designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project
()	lead designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design
()	specialist designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I Jeremy Harrison carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

<i>Design work that is restricted building work</i>	<i>Description</i>	<i>Carried out/ supervised</i>	<i>Reference to plans and specifications</i>
<i>Tick (✓) if included Cross (X) if excluded</i>	<i>[If appropriate, provide details of the restricted building work]</i>	<i>[Specify whether you carried out this design work or supervised someone else carrying out this design work]</i>	<i>[If appropriate, specify references]</i>

Primary structure

All RBW Design work relating to B1	(√)		() Carried out (√) Supervised	
Foundations and subfloor framing	(√)		() Carried out (√) Supervised	
Walls	(√)		() Carried out (√) Supervised	
Roof	(√)		() Carried out (√) Supervised	
Columns and beams	(√)		() Carried out (√) Supervised	
Bracing	(√)		() Carried out (√) Supervised	
Other	()	N/A	() Carried out () Supervised	

EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2

All RBW design work relating to E2	(√)		() Carried out (√) Supervised	
Damp proofing	(√)		() Carried out (√) Supervised	
Roof cladding or roof cladding system	(√)		() Carried out (√) Supervised	
Ventilation system (for example, subfloor or cavity)	(√)		() Carried out (√) Supervised	
Wall cladding or wall cladding system	(√)		() Carried out (√) Supervised	
Waterproofing	(√)		() Carried out (√) Supervised	
Other	()	N/A	() Carried out () Supervised	

FIRE SAFETY SYSTEMS: C1 – C6

Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other	()		() Carried out () Supervised	
--	-----	--	-----------------------------------	--

Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.

Note: continue on another page if necessary.

WAIVERS AND MODIFICATIONS

Waivers or modifications of the building code are required () Yes (☒) No

If Yes, provide details of the waivers or modifications below:

Clause	Waiver/modification required
<i>[List relevant clause numbers of building code]</i>	<i>[Specify nature of waiver or modification of building code]</i>
	N/A

Note: continue on another page if necessary.

ISSUED BY

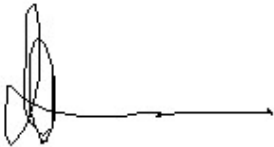
Name: Jeremy Harrison	LBP or Registration number: 105491
The practitioner is a: (☒) Design LBP () Registered architect () Chartered professional engineer	
Design Entity or Company (optional):	
Mailing address (if different from below):	
Street address / Registered office: 12 Murfitt St	
Suburb:	Town/City: Pegasus
PO Box/Private Bag:	Postcode: 7612
Phone number:	Mobile: 0277715816
After Hours:	Fax:
Email address: harrisonjerm@gmail.com	Website:

DECLARATION

I **Jeremy Harrison** *[name of practitioner]*, LBP,

state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code; or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form.



Signature:

Date: **11/5/17**

GIB EzyBrace® 2011 Software



Demand Calculation Sheet

single storey

V06/11

Job Details

Name: Roberts
 Street and Number: 27 Peakes Road
 Lot and DP Number: 2 Dp 16810
 City/Town/District: St Johns Hill
 Designer: JKH
 Company Name: Stonewood Homes Ltd
 Date: 1/01/1900



Building Specification

Select Lining Option

10 or 13 mm GIB® Plasterboard

Number of storeys

single

Floor Loading

2kPa

Foundation Type

slab

Cladding Weight

light

Roof Weight

light

Room in Roof Space

no

Roof Pitch (degrees)

25

Roof height above eaves (m)

2.5

Building height to apex (m)

4.9

Ground to lower floor level (m)

0.2

Complete Single Floor

Column only

Stud Height (m)

2.4

Building Length (m)

17.7

Building Width (m)

8.8

Building Plan Area (m2)

146

Building Location

Wind Zone

High

Select by Building Consent Authority Map
or Preference

Not Available

Wind Region

A

Lee Zone

no

Ground Roughness

Urban

Site Exposure

Sheltered

Topographic Class

T4

Earthquake Zone

2

Soil Type

D&E (deep to very soft)

Annual exceedance probability

1/500 (NZS3604:2011 default)

Bracing Units required for Wind

Demand W (BU)

Walls single

along slab 462
 across slab 928

Bracing Units required for Earthquake

Demand along / across E (BU)

Walls
 single
 slab 564

					Wind	Earthq.
Totals Achieved	W	283%	EQ	206%	1308	1161
<i>Concrete Slab</i>					OK	OK
Totals Required (from Demand)					462	564

					Wind	Earthq.
Totals Achieved	W	169%	EQ	243%	1566	1372
<i>Concrete Slab</i>					OK	OK
Totals Required (from Demand)					928	564

DESIGN CERTIFICATE

Technical basis for structural design methodology contained in designIT for houses - New Zealand.

designIT for houses, New Zealand has been developed by experienced timber engineers to assist designers in selecting appropriate sizes of structural laminated veneer lumber products manufactured by Carter Holt Harvey (including hySPAN, hy90, hyONE and hyJOIST) and other generic stress grades of timber, to be used as structural elements for the construction of buildings that fall within the scope of NZS 3604.

The design methodology used for the software complies with the loading and general design requirements contained within AS/NZS 1170 and with timber structural design in accordance with NZS 3603:1993 including Amendment 4 (Verification method B1/VM1, 6.1).

designIT relies on the accurate input of span and loading information by the user. Where accurate inputs are submitted the product and/or stress grade and the size given will comply with the structural requirements of the New Zealand Building Code (NZBC), provided the installation is in accordance with the installation requirements provided by designIT and/or in product literature and/or NZS 3604, or specific engineering design, as appropriate.

Futurebuild LVL and Laserframe components, when used and treated to the required treatment levels prescribed in NZS 3602 and NZS 3604, as modified by Acceptable Solution B2/AS1, will comply with the requirements of the NZBC (Acceptable Solution B2/AS1, 3.2).

References:

NZS 3603:1993 Timber Structures Standard.

NZS 3604:2011 Timber-framed buildings.

AS 1720.1:2010 Timber structures. Part 1: Design methods.

AS 1720.3:2016 Timber structures. Part 3: Design criteria for timber-framed residential buildings

AS/NZS 1170:2002 Structural design actions, Parts 0 and 1.

AS/NZS 1170:2011 Structural design actions, Part 2: Wind actions.

AS/NZS 1170:2003 Structural design actions, Part 3: Snow and ice actions.

This Design Certificate, and any associated warranty/certification, is void where there has been substitution of alternate products not detailed within the Member Specification.

Version date: 3 May 2017

For further information or advice contact:

Carter Holt Harvey Woodproducts New Zealand,
173 Captain Springs Road, Onehunga. Auckland
Telephone: 0800 808 131
Facsimile: 0800 808 132
Email: designit@chhwoodproducts.co.nz
Web: <http://www.chhwoodproducts.co.nz>

Specifier details:

Specifier:	Mark McCormick
Business name:	Wanganui Frames and Trusses Ltd
Email:	framesandtrusses@icloud.com

Project & site details:

Project:	Roberts_Stonewood
At (address):	27 Peakes Rd Wanganui
Design wind zone	High
Snow loading	Design snow zone: N0

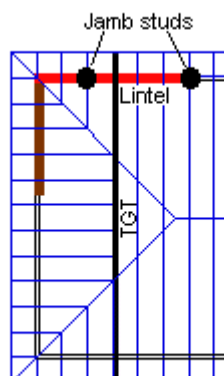
MEMBER DESIGN DETAILS

Member 1

1) Member code and description

Cantilevered Beam - Cantilevered lintels - Supporting hip roof corner

Received Wednesday, 31 January 2018



Side wall cantilevered lintel supporting hip end corner

- 2) Date prepared 25 July 2017
- 3) Serviceability criteria AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m ²
Roof pitch	25.0 °
Truss spacing	900 mm
Eaves overhang	600 mm
TGT span	8830 mm
TGT setback	2592 mm
Lintel opening width	3400 mm
Lintel overhang	1700 mm
Supported lintel span	1700 mm
Nominal wall thickness	90 mm

5) Member specification

Size, stress grade/product	Use 2/200 x 45 hySPAN
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

6) Serviceability

Load case	Limit ³ on average deflection ²	Estimated average deflection ²	Rigidity ratio ⁴
Long term load - G + Ψ LQ [*]	10.0 mm	7.1 mm (long term)	1.4
Live load - Ψ sQ	13.6 mm	2.2 mm	6.2
Wind load - Ws	17.0 mm	6.6 mm	2.6
Overhang			
Long term load - G + Ψ LQ [*]	5.0 mm	1.6 mm (long term)	3.2
Live load - Ψ sQ	5.0 mm	0.5 mm	9.7
Wind load - Ws	8.5 mm	1.6 mm	5.5

*Critical serviceability load case

See 'Notes for interpretation of serviceability data' at the end of this report

7) Reactions

	Limit States Design Reaction ^{2,3}
--	---

Received Wednesday, 31 January 2018

Load case	k_1^1	End kN ⁴	Intermediate kN
1.35G	0.60	-3.7	-10.6
1.2G + 1.5Q	0.80	-5.8	-16.4
1.2G + W _u + $\Psi_c Q$	1.00	-8.1	-23.1
0.9G + W _u	1.00	5.1	14.5

See 'Notes for interpretation of reaction data' at the end of this report

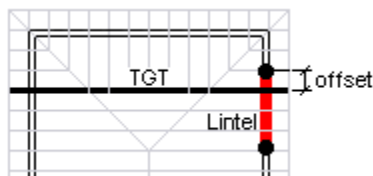
8) Installation requirements

- Cantilevered lintels installed in accordance with Detail H23
- Vertical lamination in accordance with Detail H1.

Member 2

1) Member code and description

W1 Dinning - Lintels - Supporting girder truss / truncated girder truss



2) Date prepared

25 July 2017

3) Serviceability criteria

AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m ²
Roof pitch	25.0 °
Truss spacing	900 mm
Eaves overhang	600 mm
TGT span	8830 mm
TGT setback	2592 mm
TGT offset	1692 mm
Lintel span	3000 mm
Nominal wall thickness	90 mm

5) Member specification

Size, stress grade/product	Use 2/200 x 45 hySPAN
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

6) Serviceability

Load case	Limit ³ on average deflection ²	Estimated average deflection ²	Rigidity ratio ⁴
Long term load - G + $\Psi_L Q^*$	10.0 mm	6.9 mm (long term)	1.4
Live load - $\Psi_s Q$	12.0 mm	2.1 mm	5.7
Wind load - W _s	15.0 mm	6.4 mm	2.4

*Critical serviceability load case

See 'Notes for interpretation of serviceability data' at the end of this report

7) Reactions

Limit States Design Reaction^{2,3}

Load case	k_1^1	End kN^4
1.35G	0.60	-5.5
1.2G + 1.5Q	0.80	-8.5
1.2G + W_u + $\Psi_c Q$	1.00	-12.0
0.9G + W_u	1.00	7.7

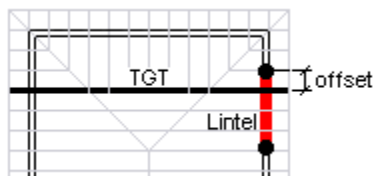
See 'Notes for interpretation of reaction data' at the end of this report

8) Installation requirements

- Provide at least 30 mm bearing at end supports
- Vertical lamination in accordance with Detail H1.

Member 3**1) Member code and description**

Garage Door - Lintels - Supporting girder truss / truncated girder truss

**2) Date prepared**

25 July 2017

3) Serviceability criteria

AS 1720.1: 2010 and AS 1720.3: 2016

4) Design inputs

Roof type	Light roof and ceiling - 40 kg/m ²
Roof pitch	25.0 °
Truss spacing	900 mm
Eaves overhang	600 mm
TGT span	6000 mm
TGT setback	2977 mm
TGT offset	2477 mm
Lintel span	3000 mm
Nominal wall thickness	90 mm

5) Member specification

Size, stress grade/product	Use 2/200 x 45 hySPAN
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

6) Serviceability

Load case	Limit ³ on average deflection ²	Estimated average deflection ²	Rigidity ratio ⁴
Long term load - G + $\Psi_L Q^*$	10.0 mm	3.9 mm (long term)	2.6
Live load - $\Psi_s Q$	12.0 mm	1.2 mm	10.2
Wind load - W_s	15.0 mm	3.6 mm	4.2

*Critical serviceability load case

See 'Notes for interpretation of serviceability data' at the end of this report

7) ReactionsLimit States Design Reaction^{2,3}

Load case	k_1^1	End kN^4
1.35G	0.60	-3.9
1.2G + 1.5Q	0.80	-6.1
1.2G + W_u + $\Psi_c Q$	1.00	-8.6
0.9G + W_u	1.00	5.4

See 'Notes for interpretation of reaction data' at the end of this report

8) Installation requirements

- Provide at least 30 mm bearing at end supports
- Vertical lamination in accordance with Detail H1.

Notes for interpretation of serviceability data

1. 'average deflection' is an engineering concept based upon a notional estimated load, notional member rigidity and, in some cases, an approximate model of material response to environmental conditions. These parameters are, 'standardised' in AS 1170 and AS 1720. Deflections calculated using this methodology cannot therefore be usefully compared with deflections calculated using other methods, eg GLTAA design methodology.
2. Deflection is the flexural response to load 'out-of-level' measurements of installations are not necessarily deflections and can incorporate 'initial out-of-straightness', whether intended or not. Furthermore, loads can be higher/lower than the notional estimate and in any comparison with measured levels, material variability needs to also be considered. AS 1720 gives the following basis for estimation of upper bound deflections for various materials.

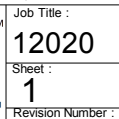
No 1 Framing – visually graded to NZS 3631	Average + 100%
SG grades - mechanically graded to AS/NZS 1748	Average + 43%
GL grades for glulam to AS 1328	Average + 33%
LVL to AS/NZS 4357 (includes hySPAN and hyJOIST)	Average +18%

As can be seen, comparison of the 'average deflection' for different materials, even if calculated on the same basis, does not give the whole picture!

3. The limits referred are those specified in AS 1720.3 for the stated load case.
4. 'Rigidity ratio' expresses the rigidity of the specified beam relative to the rigidity of a notional beam just meeting the serviceability requirements of AS 1720.3

Notes for interpretation of reaction data

1. Duration of load factor ' k_1 ' for strength as per NZ 3603:1993
2. Negative (-) reactions relate to the 'gravity' or 'downwards' force on the support
3. Positive reactions relate to the 'upwards' forces or 'tie-down' requirement on the support
4. End reaction includes allowance for overhang/cantilever where one has been designed





Correspondence from : **AUCKLAND**
40 Neales Road, East Tamaki 2013
PO Box 58-014, Botany 2163
Phone: 09 274 7109
Fax: 09 274 7100

CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03 348 8691
Fax: 03 348 0314

www.mitek.nz.co.nz

MiTek 20/20 Engineering 4.7.91.0

Printed: 12:30:59 25 Jul 2017

PRODUCER STATEMENT for MiTek 20/20[®] TRUSS DESIGN - Version 4.7

ISSUED BY: **MiTek New Zealand Limited**
TO: **Wanganui Frames and Trusses**
IN RESPECT OF: **MiTek[®] Truss Designs**

This producer statement covers the MiTek 20/20[®] truss design and the structural performance of the GANG-NAIL[®] connector plate for the job reference **12020** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20[®] truss design program has been developed by MiTek New Zealand Limited for the design of MiTek[®] timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20[®] are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution, to satisfy the requirements of Clauses B1 and B2 of the New Zealand Building Code.

On behalf of MiTek New Zealand Limited, and subject to:

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence
- vi) Timber is graded to the requirements of NZS 3603:1993
- vii) Minimum timber treatment for these MiTek[®] trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003

I believe on reasonable grounds that the trusses, if constructed in accordance with the MiTek 20/20[®] truss design and shop drawings, will comply with the relevant provisions of the New Zealand Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance no less than \$500,000.

On behalf of MiTek New Zealand Limited,

Date: Tuesday, 25 July 2017

In Ling Ng, BE (Hons), CPEng, IntPE, MIPENZ (ID: 146585)
TECHNICAL SERVICES MANAGER, MiTek New Zealand Limited

Received Wednesday, 31 January 2018

Job: 12020

Client: Placemakers Wanganui

Site: Roberts_Stonefield

Phone:

27 Peakes Rd

Wanganui

Description: New Residence

Building Consent No.:

MiTek 20/20 Engineering 4.7.91.0

MiTek New Zealand Limited.

Phone:

Printed: 12:30:59 25 Jul 2017

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **Wanganui Frames and Trusses**, being licensed to use the MiTek 20/20® software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MiTek 20/20® TRUSS DESIGN DATA

The MiTek 20/20® computer design for this job is based on the following design parameters entered into the program. The Fabricator shall ensure that these job details are current and relevant to the project for the design of the MiTek® trusses.

Job Details

Importance Level : 2

Design Working Life : 50 years

Roof Truss

Timber Group: MSG8 10 H1.2

Pitch: 25.000 deg

Nominal Overhang: 600 mm

Roof**Ceiling****Wind**

Material: Metal Tiles
Dead Load: 0.210 kPa
Restraints: 400 mm centres
Live Load: Q_r = 0.250 kPa
Q_c = 1.100 kN

Material: Standard
Dead Load: 0.200 kPa
Restraints: 400 mm centres
Live Load: Q_c = 1.400 kN

Area: High (44.0 m/s)
Pressure Coeff: C_{pe} = varies; C_{pi} = -0.30, 0.20

The minimum timber treatment for these MiTek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003. The timber for these MiTek® trusses shall be graded to the requirements of NZS 3603:1993. Proprietary fixings and timber connectors shall be selected in accordance with NZS3604:2011 Section 4 - Durability.

MiTek® Truss List

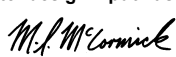
Legend: * = detail only, ? = input only, ✕ = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
GB = gable brace required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
T1	1	6000	25.000	900	J3A	1	2592	25.000	900	J4D	1	1692	25.000	900
T1A	1	6000	25.000	900	J3B	1	2592	25.000	900	J4E	1	1692	25.000	900
T2	1	8830	25.000	900	J3C	1	2592	25.000	900	J4F	1	1692	25.000	900
T2A	1	8830	25.000	900	J3D	1	2592	25.000	900	J4G	1	1692	25.000	900
T3	4	8830	25.000	864	J3E	1	2592	25.000	900	T4	1	6000	25.000	900
TG1	1	8830	25.000	900	J3F	1	2592	25.000	900	V1	1	4200	25.000	900
TG1A	1	8830	25.000	900	J3G	1	2592	25.000	900	V2	1	2400	25.000	900
TR1	1	8830	25.000	900	J3H	1	2592	25.000	900	*HB1	2	5059	18.249	900
TR1A	1	8830	25.000	900	J3I	1	2592	25.000	900	*HB2	3	7060	18.249	900
J1	1	2977	25.000	900	J3J	1	2592	25.000	900	*HB2A	1	7060	18.249	900
J1A	1	2977	25.000	900	J3K	1	2592	25.000	900	*R1	1	1790	25.000	900
J1B	1	2977	25.000	900	J3L	1	2592	25.000	900	*R1A	1	1790	25.000	900
J2	1	2077	25.000	900	J3M	1	2592	25.000	900	*R2	6	913	25.000	900
J2A	1	2077	25.000	900	J4	1	1692	25.000	900	*R2A	6	913	25.000	900
J2B	1	2077	25.000	900	J4A	1	1692	25.000	900	*R3	2	1405	25.000	900
J2C	1	2077	25.000	900	J4B	1	1692	25.000	900	*R3A	1	1405	25.000	900
J3	1	2592	25.000	900	J4C	1	1692	25.000	900	*R4	1	1405	0.000	900

Total quantity : 68

Received Wednesday, 31 January 2018

The computer design input has been carried out by:

Signed: 

Date: ...Tuesday, 25 July 2017....

Name of Detailer: Mark McCormick

Qualifications and Title: MiTek Detailer

On behalf of: Wanganui Frames and Trusses

Building Code Clause(s) **B1 only****PRODUCER STATEMENT – PS1 – DESIGN**

(Guidance notes on the use of this form are printed on page 2)

ISSUED BY: Deke Consulting Ltd

(Design Firm)

TO: Stonewood Homes Wanganui Ltd

(Owner/Developer)

TO BE SUPPLIED TO: Wanganui District Council

(Building Consent Authority)

IN RESPECT OF: New Residence

(Description of Building Work)

AT: 27 Peakes Rd, St Johns Hill, Wanganui

(Address)

LOT 2 DP 16810 SO

We have been engaged by the owner/developer referred to above to provide **Design and detailing of Ribraft floor slab.** services in respect of the requirements of

(Extent of Engagement)

Clause(s) **B1 only** of the Building Code forAll ☐ or Part only **X** (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

X Compliance Documents issued by the Ministry of Business, Innovation & Employment **VM1 and VM4** or

(verification method / acceptable solution)

☐ Alternative solution as per the attached scheduleThe proposed building work covered by this producer statement is described on the drawings titled **Roberts Residence**and numbered **170522** .;

together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:(i) Site verification of the following design assumptions **Site prepared and confirmed as Good Ground by others.**

(ii) All proprietary products meeting their performance specification requirements;

I **believe on reasonable grounds** that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 **X** CM2 CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)I, **Malcolm Thomson**

(Name of Design Professional)

am:

XCPEng 144906 #☐ Reg Arch #I am a Member of : **X** IPENZ ☐ NZIA and hold the following qualifications: **BE Civil**

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ: ☐**SIGNED BY Malcolm Thomson . ON BEHALF OF Deke Consulting Ltd**

(Design Firm)

Date **15/5/17** (signature)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.



THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, IPENZ AND NZIA

Received Wednesday, 31 January 2018

Building Consent Compliance Matrix

Client	Roberts	Designed to:
Address	27 Peakes Road	NZBC H1/AS1
Lot & DP	2 Dp 16810	NZS 4214. Method of Determining the Total Thermal
Area	St Johns Hill	Resistance of Parts of Buildings
Job #	18001	NZS 4218. Energy Efficiency - Small Building Envelope
Designer	JKH	BRANZ House Insulation Guide
Climate Zone	Zone 3	http://www.design-navigator.co.nz/CRC.php

H1 Schedule: All Walls					West, South & East walls only					North walls only (Recommend 50% max-Best Practice)				
Wall Insulation		R	2.4	Pink Batts	Wall - 90x45 @ 600crs	R	2.00							
Ceiling Insulation		R	3.6	Pink Batts	Ceiling - trusses @ 900 crs	R	3.40							
Glazing Vertical			Double	Standard	Glazing - Standard Double glaze	R	0.26							
Skylights (1.5m max)			0.00	m²	Skylight	R	0.63							
Floor	Total Envelope m²		118.10	100mm conc	Floor - Standard 100mm Conc + DPM	R	1.30							
Heated Floor		m²	0.00	100mm conc	Heated Floor	R	1.30							
Downlights	Closed & Abutted type				Closed & Abutted type									
Ground Level	Height	Length				Height	Length				Height	Length		
Total wall length	2.42	43.60	105.51	m²	Total wall length	2.42	30.40	73.57	m²	Total wall length	2.42	13.20	31.94	m²
First Floor														
Total wall length	0.00	0.00	0.00	m²	Total wall length	0.00	0.00	0.00	m²	Total wall length	0.00	0.00	0.00	m²
Total wall length	0.00	0.00	0.00	m²	Total wall length	0.00	0.00	0.00	m²	Total wall length	0.00	0.00	0.00	m²
Total Exterior Wall area			105.51	m²	Total Exterior Wall area			73.57	m²	Total Exterior Wall area			31.94	m²
Total opening area			29.91	m²	Total opening area			12.38	m²	Total opening area			8.60	m²
H1 value			28.35%	OK<30%	H1 value			16.83%	OK<30%	H1 value			26.93%	

DEKE CONSULTING LTD*Residential Civil and
Structural Design***12 Bodmin Tce, Camborne, Porirua 5026. Mob 029 976 7889. e-mail malcolm.thomson4@gmail.com**

Job Title:	Roberts Residence	Page:	1
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

The design calls for a single storey light timber frame house (heavy cladding) supported on Firth Ribraft slab on grade.

Deke Consulting has not assessed the site. Under the direction, supervision and certification of a suitably qualified LBP the site is to be suitably prepared to provide Good Ground ready directly support the proposed Ribraft slab.

Materials and construction is to be in accordance with Firth specification contained in Firth Technical Solutions Ribraft Floor Systems except as altered by attached design.

The roof truss supplier has indicated load-bearing walls not requiring slab thickenings, and a single point load in excess of 10kN.

Grade 665 mesh has been specified. The DBH advisory instructing the use of Grade 500E mesh to slabs relates to slabs designed under NZS3604, and in situations where the mesh will be required to behave ductilely under ULS load situations. This is not the case for a Ribraft slab where the slab is specifically designed and the mesh is required for crack control. Ribraft slabs also have rib reinforcement of HD12 at 1200crs providing an additional 50% of reinforcing area and is ductile Grade 500E.

Note that SE62 or equivalent with wire spacing of no greater than 200mm is an acceptable substitute for 665 mesh.



Malcolm Thomson
MIPENZ CPEng
DEKE Consulting Ltd

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Structural Design***12 Bodmin Tce, Camborne, Porirua 5026. Mob 029 976 7889. e-mail malcolm.thomson4@gmail.com**

Job Title:	Roberts Residence	Page:	2
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

The design calls for new house. Attached is a calculation of shear key piles required for this house.

Calculation of Shear Pile Requirements

Use AS1170 design philosophy of preventing damaging movement up to an SLS event, and thereafter accepting increasing levels of damage as the event increases.

The site is likely Class C or D soil.

Siesmic Loads

$C(t) = Ch(t) Z R N(T,D)$

Class D Soil	Ch(t)	3	Ru	1	Ductility	2	Timber Structure on Slab
	Z	0.25	Rs	0.25	ku	1.57	
	T	0.4	Sp	1	Ct	0.75	
			For base sliding $Sp = 1.0$		Cd	0.48	
Cd	ULS	0.48					
	SLS	0.19					

Testing by Dr McManus University of Canterbury (Geotechnical Society Symposium, 2003) found the friction co-efficient of slab on polythene on sand had peak friction co-efficients of 0.42 for an unloaded slab and 0.53 for a loaded slab. Residual friction angles were 0.38 and 0.49 respectively.

These values are somewhat lower than that published by other sources, normally 0.7 peak and 0.5 residual.

Even using the lower values there will not be relative movement between the slab and the ground at SLS level event on Class D soil.

At ULS level event there may be relative movement between the slab and the ground. Note that services are sleeved to allow 25mm of relative movement between the slab and the ground, and that even small amounts of relative movement greatly increases ductility and reduces loads to the structure. Relative movement greater than this may break services to the house but will also serve to further reduce the forces transferred to the structure of the house. This is acceptable within the intent of NZS 1170.5 2004.

Accordingly, as a design professional, I believe that shear key piles are not required for the above residence.

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Residential Civil and
Structural Design

RIBRAFT FLOOR SYSTEM

RIBRAFT DESIGN - EDGE BEAM

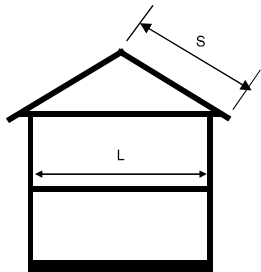
<Job No.>: 170522
 <Job Title>: Roberts Residence
 <Description>: Edge Beam

Date: 15/05/2017
 Designer: M Thomson
 Checker:

3

Loadings

Upper Wall must be Timber



Tributary Roof and Floor Lengths

WALLS

Lower:

Timber

(North/South Taupo)

= 40 kg/m²

= 0.39 kPa

Height = 2.40 m

Load/m = 0.94 kN/m

Upper:

Timber

(North/South Taupo)

= 50 kg/m²

= 0.49 kPa

Height = m

Load/m = kN/m

Other (Specify Wall Weight)

Weight = 150 kg/m²

= 1.47 kPa

Height = 2.40 m

Load = 4 kN/m

SUSPENDED MID-FLOOR

Tributary Length L/2

Unit/Floor = Timber

Topping = N/A

= 0.38 kPa

Live Loading = 1.50 kPa

Super Imposed Dead = kPa

Tributary Span = m

Dead Load/m = kN/m

Live Load/m = kN/m

ROOF

Tributary Length = S

Light = 0.46 kPa

Live Loading = 0.25 kPa

Tributary Span = 6.00 m

Dead Load/m = 2.76 kN/m

Live Load/m = 1.50 kN/m

Loadings Summary

Walls	4.47	kN/m	Dead
Mid Floors		kN/m	Dead
		kN/m	Live
Slab*	1.37	kN/m	Dead+SDL
	1.20	kN/m	Live
Roof	2.76	kN/m	Dead
	1.50	kN/m	Live^
Extra Dead		kN/m	Dead
Extra Live		kN/m	Live

* Includes Edge Beam Weight, SDL = 0.5 kPa LL = 1.5 kPa

^ Roof LL not added if midfloor exists else LL = 0.25 kPa

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Structural Design***RIBRAFT FLOOR SYSTEM***Job Details: Roberts Residence**170522**15/5/17*

Working Loads	Dead	8.61	kN/m
	Live	2.70	kN/m
Ultimate Loads (1.2G + 1.6Q)	Dead	10.33	kN/m
	Live	4.32	kN/m
Total Ultimate Load on Edge	w = 14.65 kN/m		

Wall Construction Type	Brick Veneer min beam width 300mm		
Edge Beam Details	Beam Width =	300	mm
	Pod Depth =	220	mm
	Top slab Depth =	85	mm
	Self Weight =	2.20	kN/m
	Construction Type =	Standard Raft	
OK!			

Standard Raft Construction			
Bearing Capacity Over Platform:		100	kPa
Bearing Check =		OK!	
Working Pressure =		32	kPa
Steel Requirements - As Per Firth Std Drg's			
Top Steel:		1HD12	
Btm Steel:		2HD12	

Continuous Piers			
(N.B. All Edge Beam Load in to 'strip' footing) Assume 100 kPa Bearing Under Edge Beam, unless a Soil Report indicates otherwise.		Bearing Capacity under Piers: kPa	
All Load Here 100 kPa min or as specified in Report under loadbearing areas.	Bearing Check =		
	Pressure =		kPa
Steel Requirements - As Per Firth Std Drg's			
Top Steel:			
Btm Steel:			

The prescribed Edge Beam design		Standard Raft Construction	
Location (ie: which wall): Edge Beam		300 mm wide edge beam with 1HD12 in top & 2HD12 in bottom	

INTERNAL RIB
Doc. Date 9/3/1999

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Residential Civil and
Structural Design

RIBRAFT FLOOR SYSTEM

RIBRAFT DESIGN - INTERNAL LOADBEARING RIB

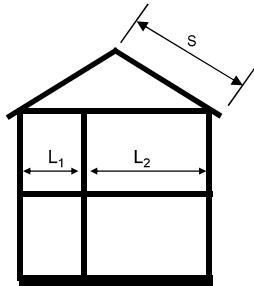
<Job No.>: 170522
<Job Title>: Roberts Residence
<Description>: Internal Rib

Date: 15/05/2017
Designer: M Thomson
Checker:

4

Loadings

With load spread via reinforced ribs, wall load is taken over 2m of ribs per 1m of line load



Tributary Roof and Floor Lengths

With load spread via reinforced ribs, wall load is taken over 2m of ribs per 1m of line load

WALLS

Lower: HOTBloc Solid (North/South Taupo)
Light = 400 kg/m²
= 3.92 kPa
Height = m
Load/m = kN/m

Upper: HOTBloc Solid (North/South Taupo)
Light = 400 kg/m²
= 3.92 kPa
Height = m
Load/m = kN/m

Other (Specify Wall Weight)
Weight = kg/m²
= kPa
Height = m
Load = kN/m

SUSPENDED MID-FLOOR

Tributary Length = (L₁+L₂)/2

Unit/Floor = Timber
Topping = N/A
= 0.38 kPa
Live Loading = kPa
Super Imposed Dead = kPa
Tributary Span = m
Dead Load/m = kN/m
Live Load/m = kN/m

ROOF

Tributary Length = S (Check if Rafter or Truss)
Light = 0.46 kPa
Live Loading = kPa
Tributary Span = m
Dead Load/m = kN/m
Live Load/m = kN/m

Loadings Summary

Item	Value	Unit	Type
Walls		kN/m	Dead
Mid Floors		kN/m	Dead
		kN/m	Live
Slab*		kN/m	Dead+SDL
	1.80	kN/m	Live
Roof		kN/m	Dead
		kN/m	Live [^]
Extra Dead		kN/m	Dead
Extra Live		kN/m	Live

* Includes Internal Rib Weight, SDL = 0.5 kPa LL = 1.5 kPa

[^] Roof LL not added as slab LL at ULS.

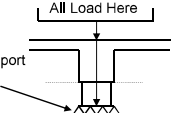
INTERNAL RIB
Doc. Date 9/3/1999

DEKE CONSULTING LTD Residential Civil and Structural Design									
RIBRAFT FLOOR SYSTEM									
Job Details: Roberts Residence Job Number: 170522 15/5/17									
Working Loads	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Dead</td> <td style="width: 30%;"></td> <td style="width: 10%; text-align: right;">kN/m</td> <td style="width: 30%;"></td> </tr> <tr> <td>Live</td> <td style="text-align: right;">1.80</td> <td style="text-align: right;">kN/m</td> <td></td> </tr> </table>	Dead		kN/m		Live	1.80	kN/m	
Dead		kN/m							
Live	1.80	kN/m							
Ultimate Loads (1.2G + 1.5Q)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Dead</td> <td style="width: 30%;"></td> <td style="width: 10%; text-align: right;">kN/m</td> <td style="width: 30%;"></td> </tr> <tr> <td>Live</td> <td style="text-align: right;">2.70</td> <td style="text-align: right;">kN/m</td> <td></td> </tr> </table>	Dead		kN/m		Live	2.70	kN/m	
Dead		kN/m							
Live	2.70	kN/m							
Total Ultimate Load on Internal	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%; text-align: right;">w =</td> <td style="width: 10%; text-align: right;">2.70</td> <td style="width: 30%; text-align: right;">kN/m</td> </tr> </table>		w =	2.70	kN/m				
	w =	2.70	kN/m						

Internal Rib Details	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Rib Width =</td> <td style="width: 10%; text-align: right;">100</td> <td style="width: 10%; text-align: right;">mm</td> <td style="width: 20%;"></td> </tr> <tr> <td>Pod Depth =</td> <td style="text-align: right;">220</td> <td style="text-align: right;">mm</td> <td rowspan="3" style="text-align: center; vertical-align: middle; color: red; font-weight: bold;">OK!</td> </tr> <tr> <td>Top slab Depth =</td> <td style="text-align: right;">85</td> <td style="text-align: right;">mm</td> </tr> <tr> <td>Self Weight =</td> <td style="text-align: right;">0.53</td> <td style="text-align: right;">kN/m</td> </tr> <tr> <td>Construction Type</td> <td colspan="3"> Standard Raft </td> </tr> </table>	Rib Width =	100	mm		Pod Depth =	220	mm	OK!	Top slab Depth =	85	mm	Self Weight =	0.53	kN/m	Construction Type	Standard Raft		
Rib Width =	100	mm																	
Pod Depth =	220	mm	OK!																
Top slab Depth =	85	mm																	
Self Weight =	0.53	kN/m																	
Construction Type	Standard Raft																		

Standard Raft Construction	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Bearing Capacity:</td> <td style="width: 10%; text-align: right;">100</td> <td style="width: 10%; text-align: right;">kPa</td> <td style="width: 20%;"></td> </tr> <tr> <td>Bearing Check =</td> <td style="text-align: right;">OK!</td> <td></td> <td></td> </tr> <tr> <td>Working Pressure =</td> <td style="text-align: right;">7</td> <td style="text-align: right;">kPa</td> <td></td> </tr> <tr> <td colspan="4" style="padding-top: 10px;"> Steel Requirements - As Per Firth Std Drg's </td> </tr> <tr> <td>Btm Steel:</td> <td colspan="3">1HD12</td> </tr> </table>	Bearing Capacity:	100	kPa		Bearing Check =	OK!			Working Pressure =	7	kPa		Steel Requirements - As Per Firth Std Drg's				Btm Steel:	1HD12		
Bearing Capacity:	100	kPa																			
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Btm Steel:	1HD12																				

Continuous Piers (N.B. All Internal Load in to 'strip' footing) Assume 100 kPa Bearing Under Loadbearing Rib, unless a Soil Report indicates otherwise.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Bearing Capacity:</td> <td style="width: 10%; text-align: right;"></td> <td style="width: 10%; text-align: right;">kPa</td> <td style="width: 20%;"></td> </tr> <tr> <td>Bearing Check =</td> <td style="text-align: right;"></td> <td></td> <td></td> </tr> <tr> <td>Pressure =</td> <td style="text-align: right;"></td> <td style="text-align: right;">kPa</td> <td></td> </tr> <tr> <td colspan="4" style="padding-top: 10px;"> Steel Requirements - As Per Firth Std Drg's </td> </tr> <tr> <td>Btm Steel:</td> <td colspan="3"></td> </tr> </table>	Bearing Capacity:		kPa		Bearing Check =				Pressure =		kPa		Steel Requirements - As Per Firth Std Drg's				Btm Steel:			
Bearing Capacity:		kPa																			
Bearing Check =																					
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Steel Requirements - As Per Firth Std Drg's																					
Btm Steel:																					

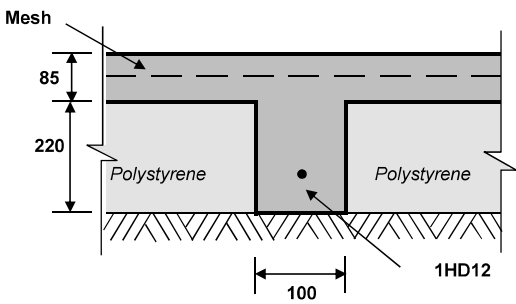


100 kPa min or as specified in Report under loadbearing areas.

The prescribed internal rib design is:

Internal Rib

Standard Raft Construction,
100 wide Rib required with 1HD12 in bottom



Column Design
Doc. Date: 4/5/1999

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PAD DESIGN	
5	

<Job No.>: <Job Title>: <Description>:	170522 Roberts Residence Internal Pads. 600mm sq carrying upto 35kN	Date: 15/5/17 Designer: ##### Checker: Thomson
--	---	--

	Soil Bearing Capacity = 100 kPa
Total Ultimate Load	w = 35.0 kN

Footing Design NZS 3101: Part 1: 1995: 8.4.4	DIMENSIONS Foundation Area Required = Load/Bearing Cap. = 0.35 m² Minimum Foundation Size Required = 591 x 591 mm Adopted Foundation Size = 600 x 600 mm Foundation Depth = 220 mm REINFORCEMENT STEEL $p_{min} = \frac{\sqrt{f_c'}}{4f_y}$ $f_c' = 17.5 \text{ MPa}$ $f_y = 500 \text{ MPa}$ $p_{min} = 0.00209$ $p_{min} \times csa \text{ concrete} = 273 \text{ mm}^2$ Use 3-HD12 in both directions = 339 mm² OK
--	---

The prescribed footing design is: Footing = 600 x 600 mm by 220 mm deep with 3-HD12 in both directions Location on plan:	
--	--

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Structural Design*

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Job Title:	Roberts Residence	Page:	6
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

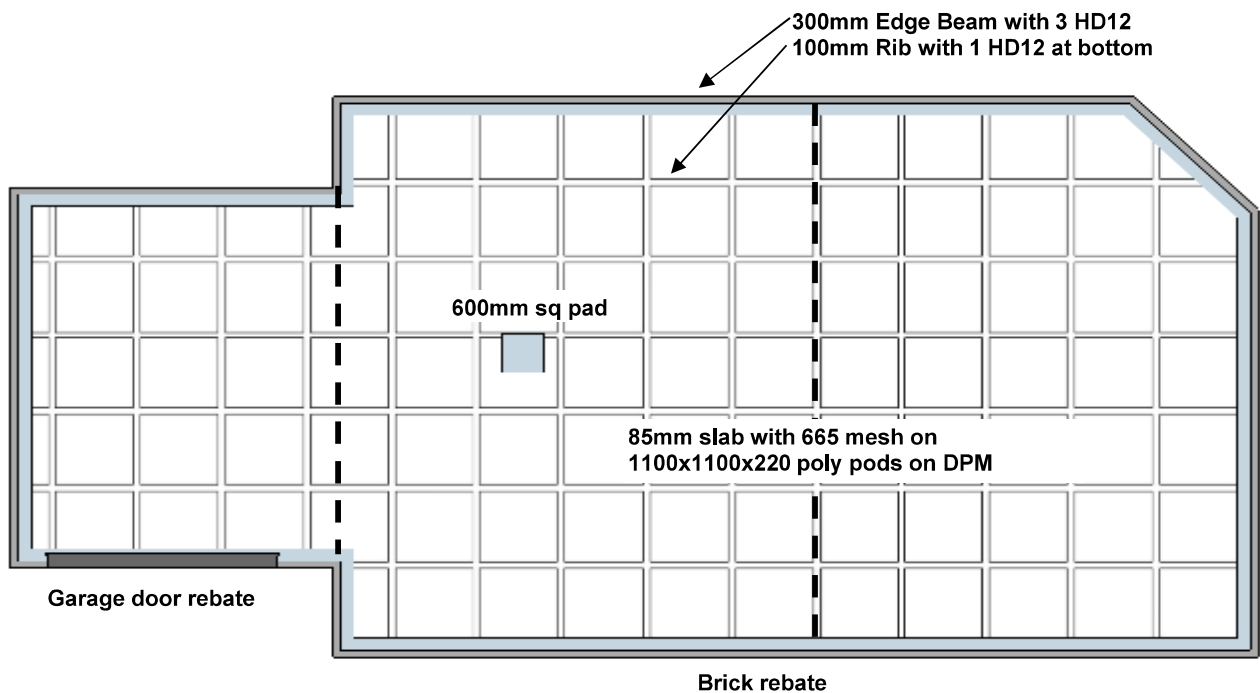
Ribraft Plan

Not to scale See designers plans for dimensions and floor plan

Notes

- 1 Construction of Ribraft slab to be as per Firth Technical Manual except as altered by this design.
- 2 Deke Consulting has not assessed the site. Under the direction, supervision and certification of a suitably qualified LBP the site is to be suitably prepared to provide Good Ground ready directly support the proposed Ribraft slab.
- 3 600mm sq pad under point load as per following page.
- 4 Services to be carried through slab as per attached details to allow movement.
- 5 Sawcuts are to made within 24 hrs of pouring of the slab and, where possible, located under wall lines. Note that cutting the slab reduces the risk of uncontrolled cracking but does not eliminate the risk. Should additional assurance against cracking be required, please refer to Deke Consulting Ltd for advice.

- Deke Consulting has not assessed the site. Under the direction, supervision and certification of a suitably qualified LBP the site is to be suitably prepared to provide Good Ground ready directly support the proposed Ribraft slab.
- If underfloor heating is installed, slab thickness to be increased to 110mm.
- Concrete 20MPa Firth Raftmix



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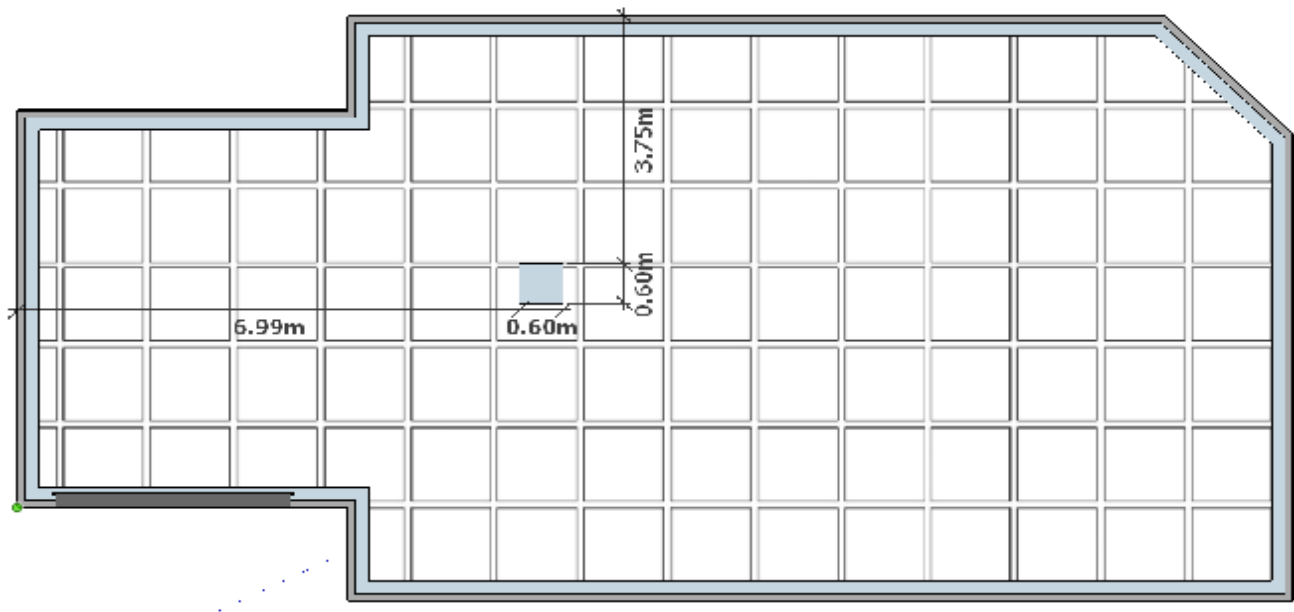
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Job Title:	Roberts Residence	Page:	7
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Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

Load Bearing Walls

Not to scale



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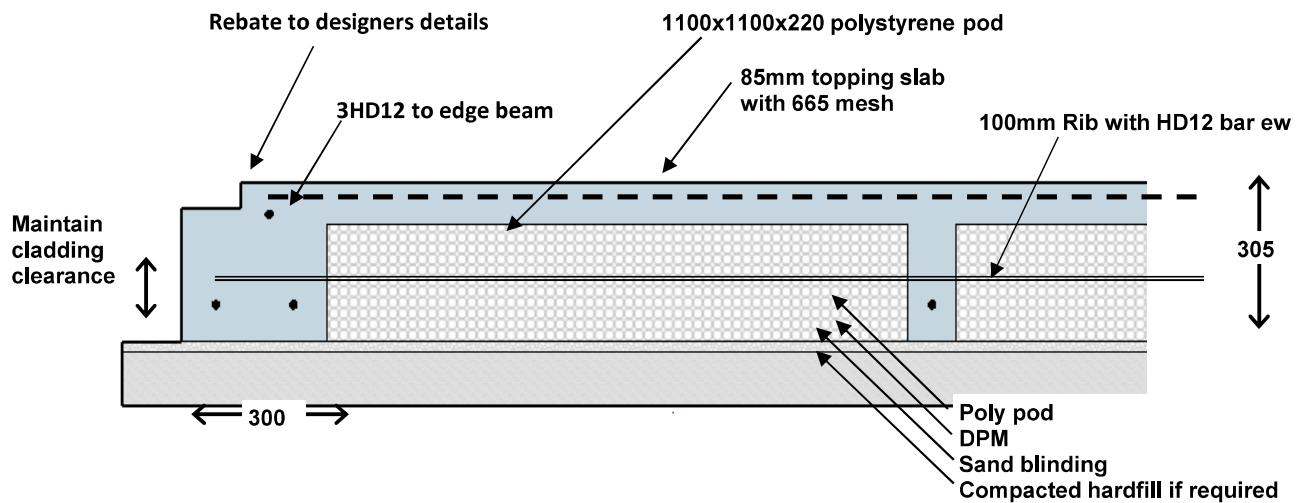
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Job Title:	Roberts Residence	Page:	8
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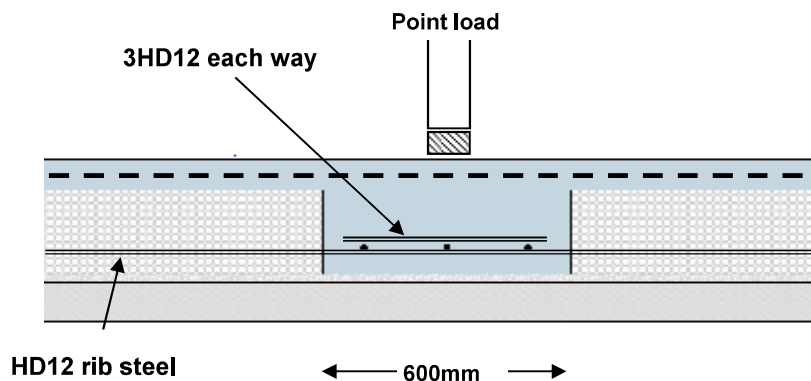
Ribraft Details

300mm Edge Beam

100mm Rib



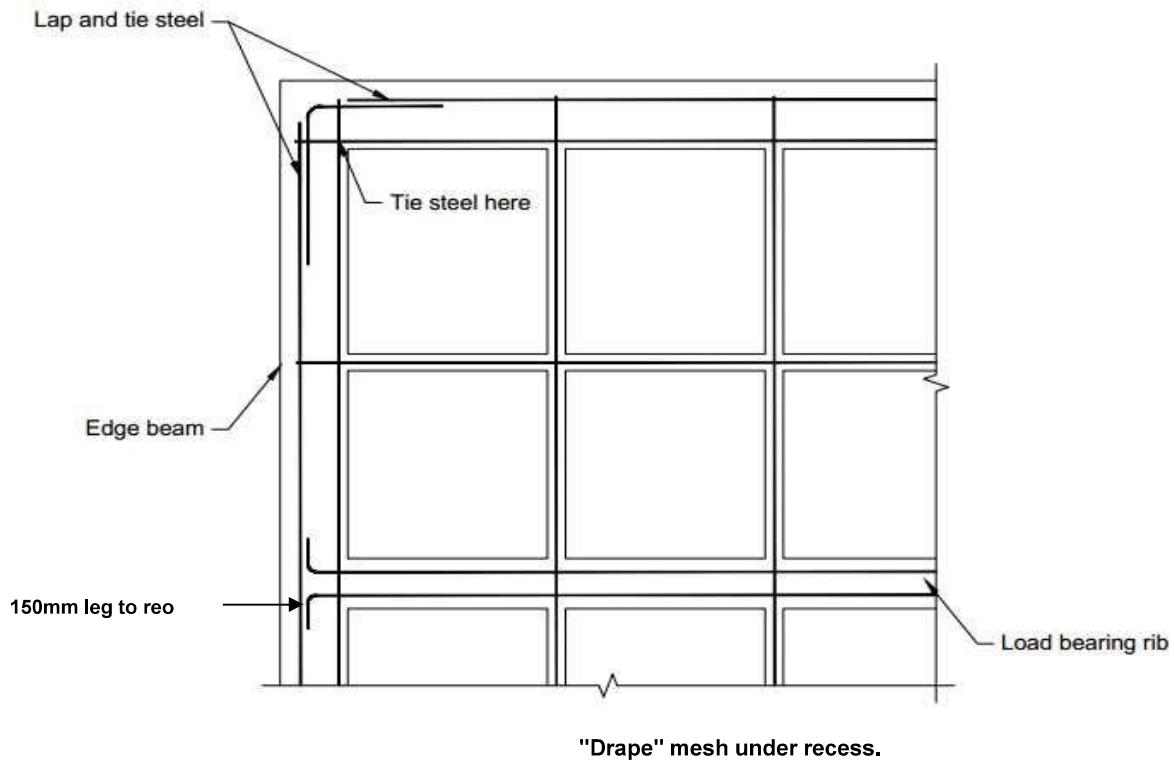
600mm SQUARE PAD



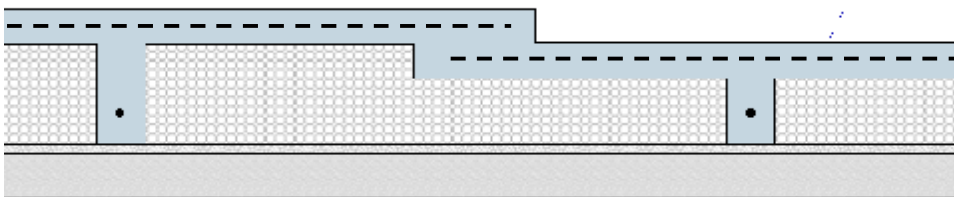
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Job Title:	Roberts Residence	Page:	9
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Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

Corner Detail**Normal Slab****Shower Recess**

Cut and lap mesh by one sq plus 50mm



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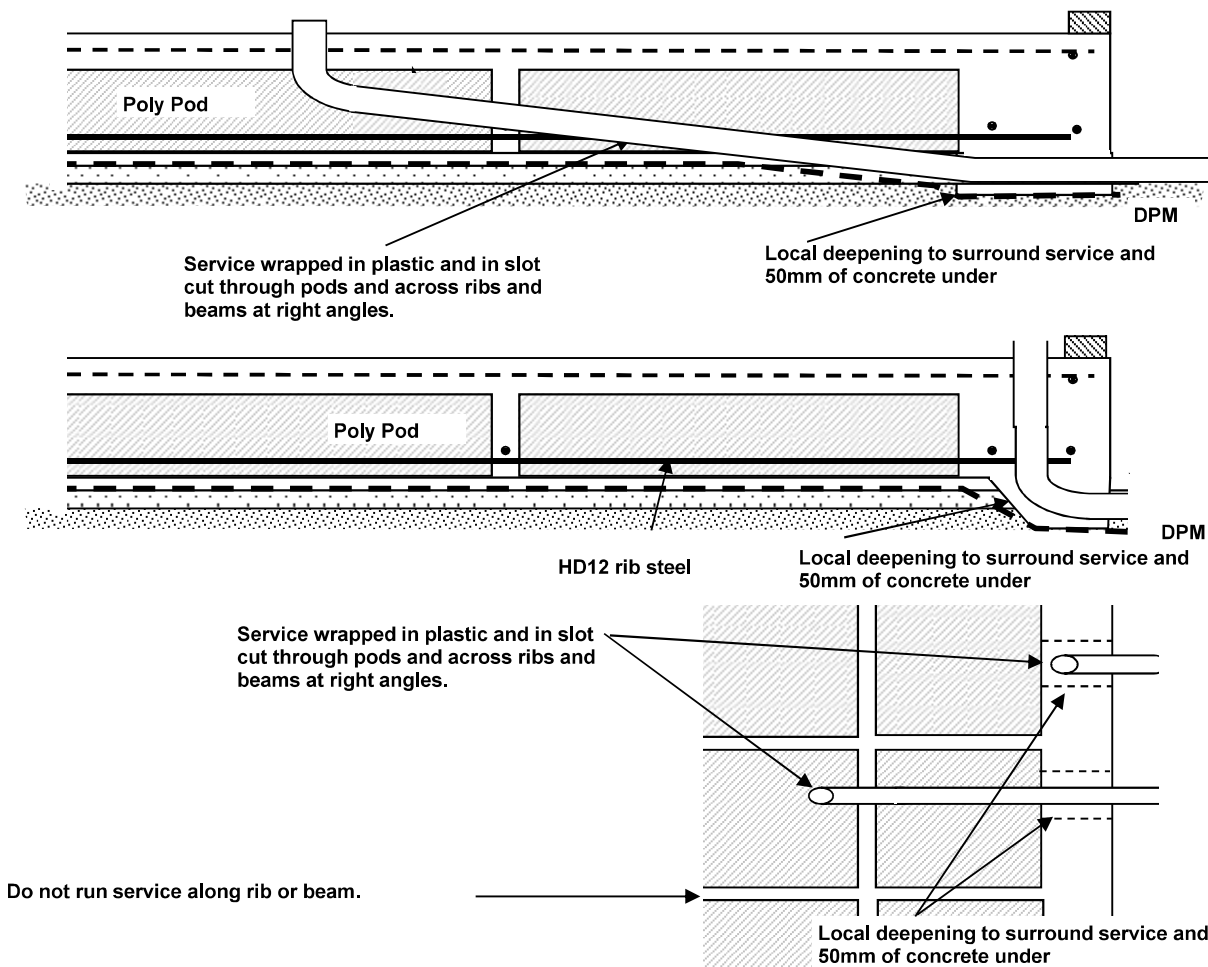
12 Bodmin Tce, Camborne, Porirua 5026. Mob 029 976 7889. e-mail malcolm.thomson4@gmail.com

Job Title:	Roberts Residence	Page:	10
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

Services Through Slab

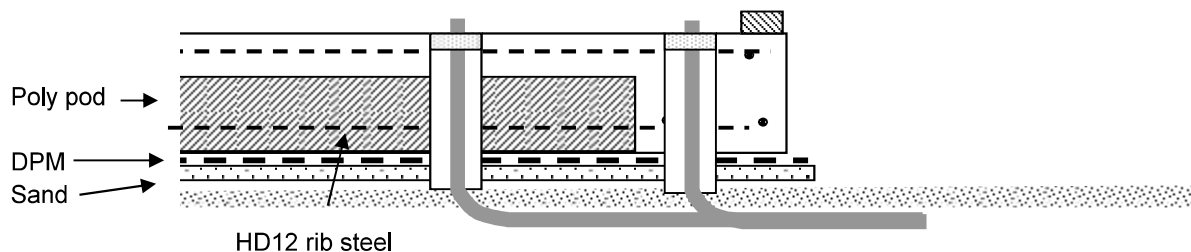
Preferred Detail

Following placing of pods, cut slot in pods with hot wire to cross ribs and beams. **Do not run services along ribs and beams. Take service under edge beam reinforcing.**



Or Sleeved Services.

Services to be placed centrally in ducts with ID 50mm larger than service OD. Ducts to be firmly embedded in sand and securely fixed and taped to prevent displacement during concreting.



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Job Title:	Roberts Residence	Page:	Spec 1
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

RIBRAFT SPECIFICATION**MATERIALS****BLINDING**

50 mm maximum compacted GAP 7.

DAMP-PROOF MEMBRANE

0.25 mm minimum polyethylene to NZS 3604: clause 7.5.4, Damp-proof membrane (DPM). Refer to SELECTIONS.

POLYSTYRENE PODS**Firth** RibRaft[®] proprietary purpose made polystyrene pods.**REINFORCEMENT**

Bars to AS/NZS 4671. Grade 500E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings.

INTERNAL CORNER REINFORCEMENT

Minimum 2 x D12 bars Grade 300E to AS/NZS 4671.

MESH

665 reinforcing mesh conforming to NZS4671. Note that SE62 or equivalent with wire spacing of no greater than 200mm is an acceptable substitute.

TYING WIRE

Mild drawn steel wire not less than 1.2 mm diameter.

CONCRETE – RIBRAFT[®] APPLICATIONS

20 MPa 100 mm slump mix in either 13 mm or 19 mm nominal aggregate size.

Firth Raftmix[™] for direct placement and **Firth** Raftmix[™] Pump for pump applications.

Use 25MPa concrete when in seaspray zones.

SPACERS**Firth** proprietary spacers or Wilton Joubert spacers.**INSTALLATION****BUILDING PLATFORM**

Create a building platform approximately 320mm below finished floor level.

For flat sites, clear the slab area (or fill area) plus 300mm of any vegetation, topsoil, loose, soft or disturbed ground to expose stiff sub-grade.

For sloping sites, cut as required to expose stiff sub-grade material for the full extent of required filling.

TEMPORARY BUILDING PLATFORM DRAINAGE

Construct suitable drainage to keep excessive ground water off the building platform during and after construction as required.

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Job Title:	Roberts Residence	Page:	Spec 2
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

RIBRAFT SPECIFICATION**POST-CUT INSPECTION**

Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform with the requirements of the **Firth RibRaft®** manual. Refer to **Firth RibRaft®** Floor System Manual Section 1 - Design Information, 3.5 Foundation Soils.

HARDFILL

Fill site to required level.

Where final level of fill is below EGL, compacted fill to extend 200mm past edge of slab.

Where final level of fill is above EGL, level compacted fill to extend 600mm past edge of slab, and not slope down steeper than 2H:1V.

Hardfill to be clean granular material at a suitable moisture content for compaction. To be placed in loose layers not thicker than 150mm, and compacted using dedicated vibratory compaction equipment till no movement is discernible.

HARDFILL

Place hardfill and ensure it is spread and compacted with mechanical compaction.

Hardfill to be clean granular material at a suitable moisture content for compaction. To be placed in loose layers not thicker than 150mm, and compacted using dedicated vibratory compaction equipment till no movement is discernible.

UNDERGROUND SERVICES

Ensure underfloor services are installed in the subsoil or hardfill in locations as shown on the drawings and according to **Firth RibRaft®** floor system requirements. Refer to **Firth RibRaft®** Floor System Manual Section 2 - Installation Information, 3.4 Plumbing and Services.

BLINDING

Spread GAP 7 blinding layer to a minimum 500 mm past the outside edge of the slab, compact to a level layer no greater than 50 mm thick and no higher than 305 mm below finished ground level.

FORMWORK

Construct formwork as required, well braced and tied to remain in position, straight and plumb during construction. Ensure formwork will provide for the topping depth, including rebates and the required concrete finish.

INSTALL DAMP-PROOF MEMBRANE

Apply DPM to the prepared basecourse extending to the outside of all edge beams or fold and staple up the inside of the formwork. Overlap all joints in the DPM sheets a minimum 150 mm. Tape laps and penetrations with 50 mm wide pressure sensitive plastic tape. Ensure DPM is not damaged during the construction process. Repair all damage to DPM before proceeding with following procedures.

PLACE POLYSTYRENE PODS

Place polystyrene pods in a regular waffle pattern using the spacers in the specified grid pattern to fit the floor plan. Cut pods on site with a saw or suitable hot wire as required. Cut holes for services and trim around piles as required on site.

DEKE CONSULTING LTD

*Residential Civil and
Structural Design*

12 Bodmin Tce, Camborne, Porirua 5026. Mob 029 976 7889. e-mail malcolm.thomson4@gmail.com

Job Title:	Roberts Residence	Page:	Spec 3
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

RIBRAFT SPECIFICATION

INSTALL SPACERS

Install spacers and locations to the **Firth RibRaft®** floor system requirements.

Form standard ribs between pods using **Firth** 100 mm spacers. Place the spacers at a minimum of one spacer along each edge of each pod or part pod. The ribs in both directions form a waffle pattern throughout the slab.

Form the edge beam using **Firth** 300 mm spacers. Place the spacers at 1200 mm centres maximum along the perimeter of the slab at least and one spacer per pod or part pod.

Form ribs to support loadbearing walls using **Firth** 300 mm spacers. Place the spacers at a minimum of one spacer along the edge of each pod or part pod.

PLACE REINFORCING STEEL: RIB STEEL

Place rib reinforcing steel in the bottom of the internal ribs and supported in the correct position by the **Firth** spacers. Lap all steel 600 mm minimum. At the junction with the edge beam, each rib steel bar shall sit on top of the edge beam bars and extend to the outermost bar. Allow for 75 mm cover to the edge of the beam. Place 1 x HD12 bar in each 100 mm wide rib and 2 x HD12 bars in each 300 mm wide rib.

PLACE REINFORCING STEEL: EDGE BEAM STEEL

Place the two edge beam reinforcing bars in the bottom of the edge beam and supported in the correct position by the **Firth** spacers. Tie one edge beam bar below the mesh at the perimeter of the area covered by the polystyrene pods. Lap all steel 600 mm minimum. At corners, the inner bottom bars and the top bars cross each other and extend to 75 mm from the outside face of the edge beam. Tie these bars together where they cross. Tying of edge beam steel is only required at corners.

PLACE REINFORCING STEEL: RE-ENTRANT CORNER STEEL

Place two D12 bars, 1200 mm in length across the corner. Tie to the top of the mesh at re-entrant corners at 200 mm centres with 50 mm side cover from the internal corner.

Install specified steel to **Firth RibRaft® Floor System Manual Section 2 - Installation Information, 3.9 Reinforcing Steel**. Ensure specified minimum cover requirements are maintained.

PLACE REINFORCING MESH AND CHAIRS

Place reinforcing mesh over the pods and support on the mesh chairs spaced at 1200 mm centres minimum, with two mesh chairs minimum placed per pod and with one mesh chair minimum per part pod. Lap mesh 225 mm minimum and tied at all laps.

FORM SLAB AND OPENING REBATES

Form rebates, as detailed on drawings.

Form a minimum 50 mm rebate in slab for masonry veneer construction with a width dependent on the veneer width, cavity width and overhang. Waterproof the rebate with a bituminous sealer on both the vertical and horizontal faces.

STARTERS FOR MASONRY WALL CONSTRUCTION

Install wall starter bars in the correct position for the masonry block series being used to NZS 4229 and **RibRaft®** manual.

Deke Consulting Ltd. 12 Bodmin Tce, Camborne, Porirua 5026
Mob 029 976 7889 Tel (04) 976 7889 e.mail - malcolm.thomson4@gmail.com

DEKE CONSULTING LTD*Residential Civil and
Structural Design***12 Bodmin Tce, Camborne, Porirua 5026. Mob 029 976 7889. e-mail malcolm.thomson4@gmail.com**

Job Title:	Roberts Residence	Page:	Spec 4
Designer:	Stonewood Homes Wanganui Ltd	Job #:	170522
Owner:	Stonewood Homes Wanganui Ltd	Date:	15/05/2017
Job Address:	Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui	By:	M Thomson
		Chkd:	

RIBRAFT SPECIFICATION**UNDERFLOOR HEATING**

Where underfloor inslab heating system is required ensure installation is completed to manufacturer's requirements. Slab topping thickness to be 110mm, and total slab thickness of 330mm.

TOPPING SLAB DEPTH

85 mm minimum plus additional cover as required for infloor heating.

PRE-PLACEMENT INSPECTION

Arrange for excavations, formwork and reinforcement to be inspected and passed by the Building Consent Authority.

CONCRETE PLACEMENT AND COMPACTION

Ensure the rib and edge beam canals are clean, free of debris. Pour the floor in a single pour using only **Firth Raftmix™** or **Firth Raftmix™** Pump concrete and ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting.

Use **Firth Raftmix™** for placement in the floor directly from the concrete truck chute or **Firth Raftmix™** Pump concrete for placement in the floor by concrete pump.

Compact concrete using a suitable poker vibrator for the ribs and ground beams and into all corners of the formwork. Screed as required. Confirm levels with a laser level.

CONCRETE FINISHING

Float and trowel to provide a U3 finish to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

CONCRETE CURING

Curing of the concrete slab must take place immediately after finishing the concrete to NZS 3109 by one of the following curing methods:

- ponding or continuous sprinkling of water
- Placing a wet covering or plastic membrane over the slab
- the use of liquid membrane curing compounds

SHRINKAGE CONTROL JOINTS

Cut shrinkage control joints as shown on the plans after hardening to a depth of 25 mm within 24 hours in summer or 48 hours in winter.

Where shrinkage control joints have not been shown on the plans, position the shrinkage control joints to coincide with major changes in the floor plan. Agree position of shrinkage control joints with the designer.

Bay dimensions formed by the shrinkage control joints to be limited to a maximum ratio of length to width of 2 to 1 with a maximum dimension of 5 metres. Place the shrinkage control joints over the 100 mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300 mm wide loadbearing rib, locate the cut directly above one edge of the 300 mm rib. Do not place supplementary reinforcing bars (including re-entrant corner steel) across any shrinkage control joints.

CLEAN OUT SHRINKAGE CONTROL JOINTS

Clean out control joints. If required fill with suitable flexible sealant.

Deke Consulting Ltd. 12 Bodmin Tce, Camborne, Porirua 5026
Mob 029 976 7889 Tel (04) 976 7889 e.mail - malcolm.thomson4@gmail.com

MEMORANDUM OF DESIGN OF RESTRICTED BUILDING WORK FROM LICENSED BUILDING PRACTITIONER (LBP)

The Building: Roberts Residence : Lot 2 DP 16810 27 Peakes Rd, St Johns Hill, Wanganui

(No. / Street / Suburb / City / Post Code)

The Owner: Stonewood Homes Wanganui Ltd

(Name / Address / email / phone)

LBP: Malcolm Thomson, malcolm.thomson@clear.net.nz 144906..... **Practice Area:** Civil

(Name / Address / email / phone / CPEng No.)

Design Legal Entity: Deke Consulting Ltd, 12 Bodmin Tce, Camborne, Wellington 5026, Malcolm.thomson@clear.net.nz 029 976 7889, 04 976 7889

(Design firm name / Address / email / phone)

Identification of design work that is Restricted Building Work

Description of Restricted Building Work	BC Clause	Means of compliance	Reliance on other LBPs	Reliance on Proprietary Elements	Waiver
Foundations and sub-floor framing : Design and detailing of Ribraft slab.	B1 only	VM1 and VM4	Confirmation of site preparation by others.	Nil	Nil

Accompanying Documents

Drawing Register
Drawings
Calculations #170522

Specifications #170522
Design Report
Geotechnical Report

PS 1 #170522
PS 2
Other

Declaration

I, Malcolm Thomson, LBP state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work described on this form and that based on this I also state that the RBW:

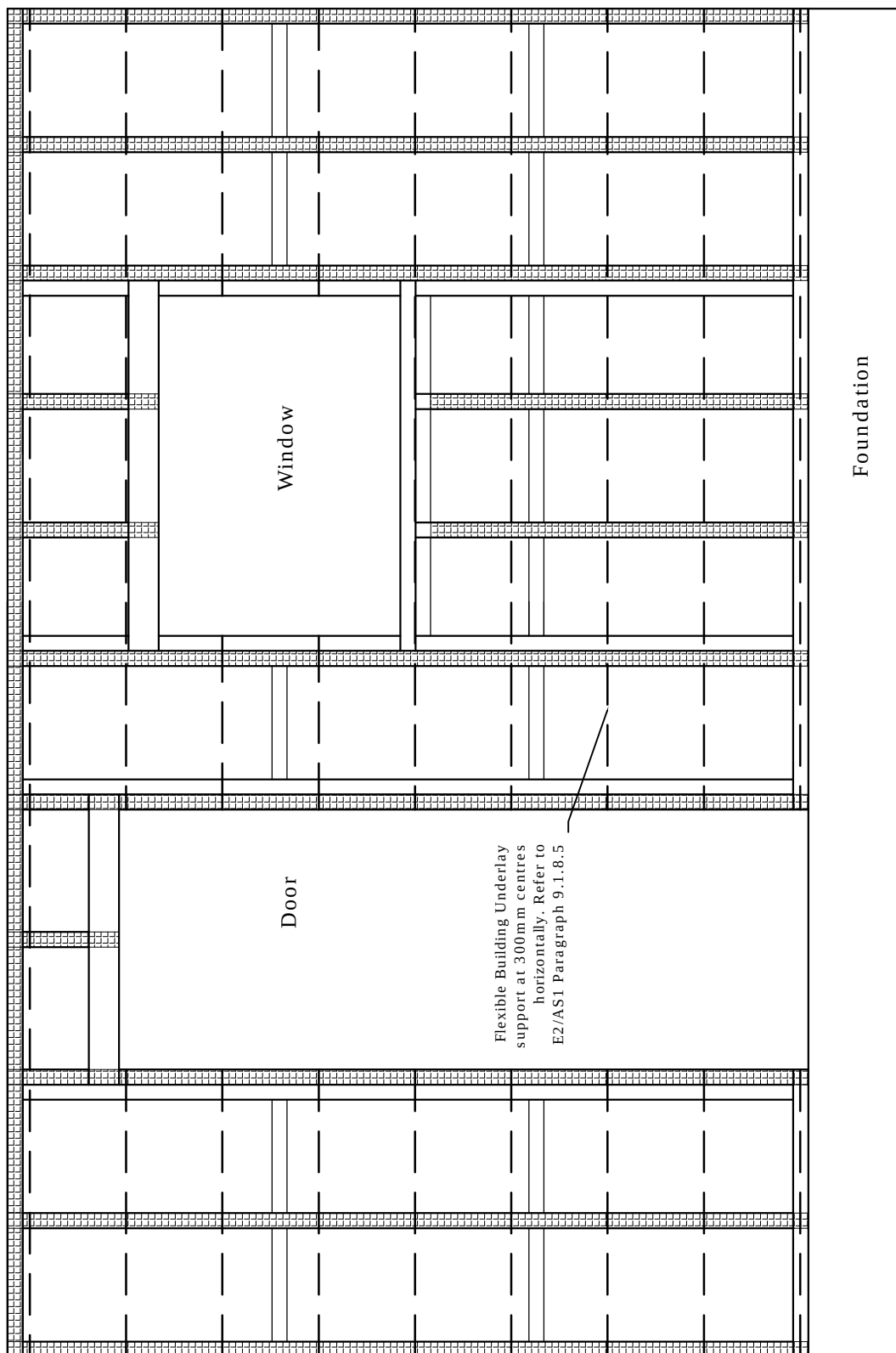
- (a) complies with the Building Code clauses identified on this form; or
(b) complies with the Building Code subject to any waiver or modification of the Building Code recorded on this form.

Signature:



Date: 15/5/17

Note: This form is consistent with clause 45(a) of the Building Act 2004. The form shall only be used for residential projects less than 10 metres high.



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System
Insulated Facade System

Substrate
40 mm EPS

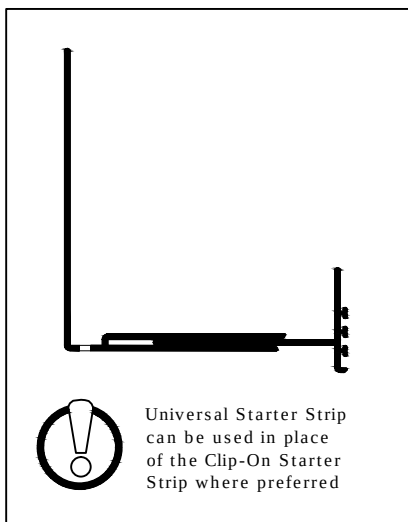
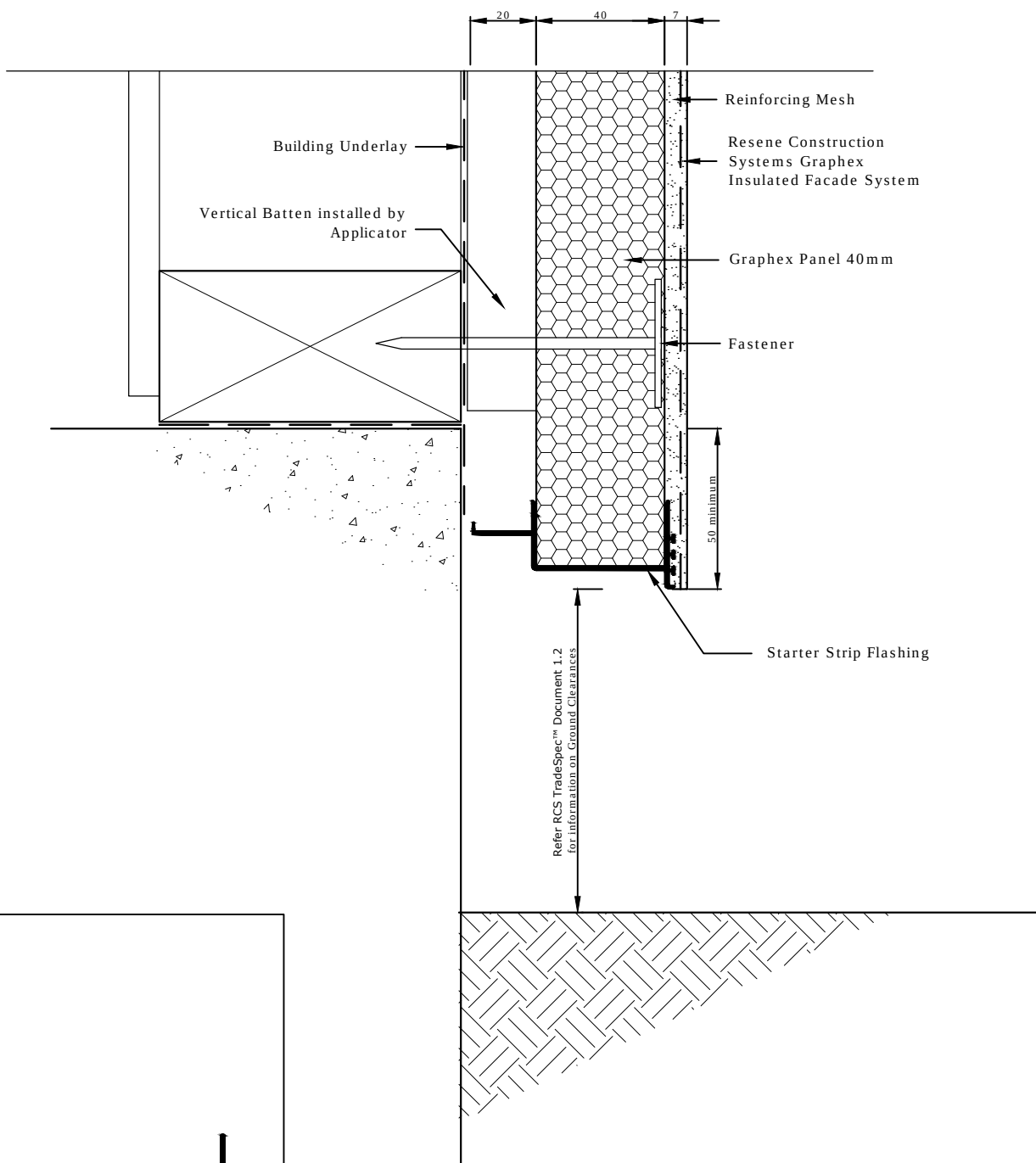
Drawing Name
Batten Layout (400mm Centres)

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
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Refer RCS TradeSpec™ Document 1.2 for information on Ground Clearances

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System
 Graphex Insulated Facade System

Substrate
 Graphex Panel 40mm

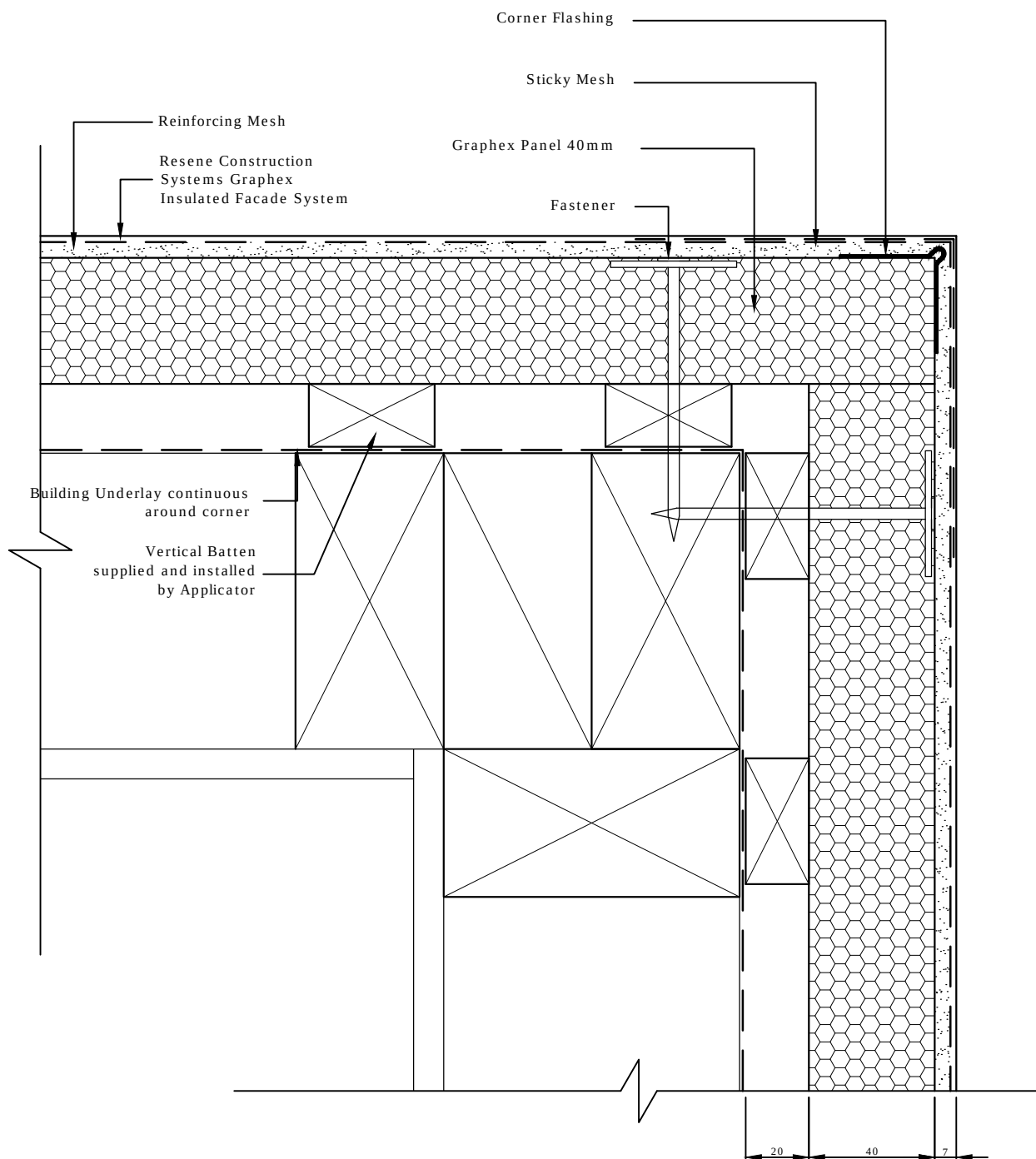
Drawing Name
 Foundation

Scale
 1 : 2 @ A4

Date
 12 November 2015

Sheet
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System
Graphex Insulated Facade System

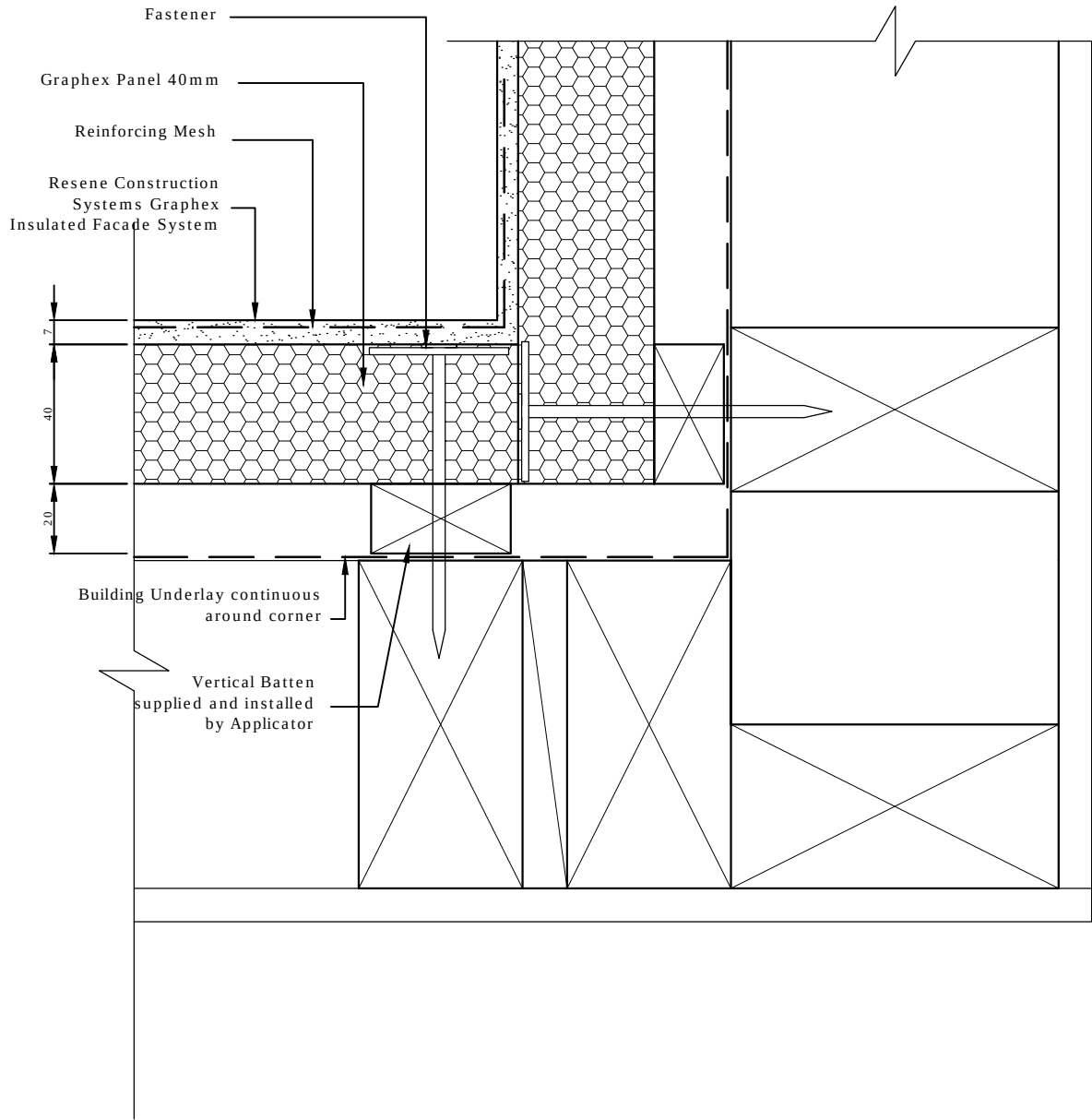
Substrate
Graphex Panel 40mm

Drawing Name
External Corner

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
70.03.00



Mesh to be wrapped continuously around the internal corner, if there is a break in the mesh then an additional layer of Sticky Mesh must be used

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System
Graphex Insulated Facade System

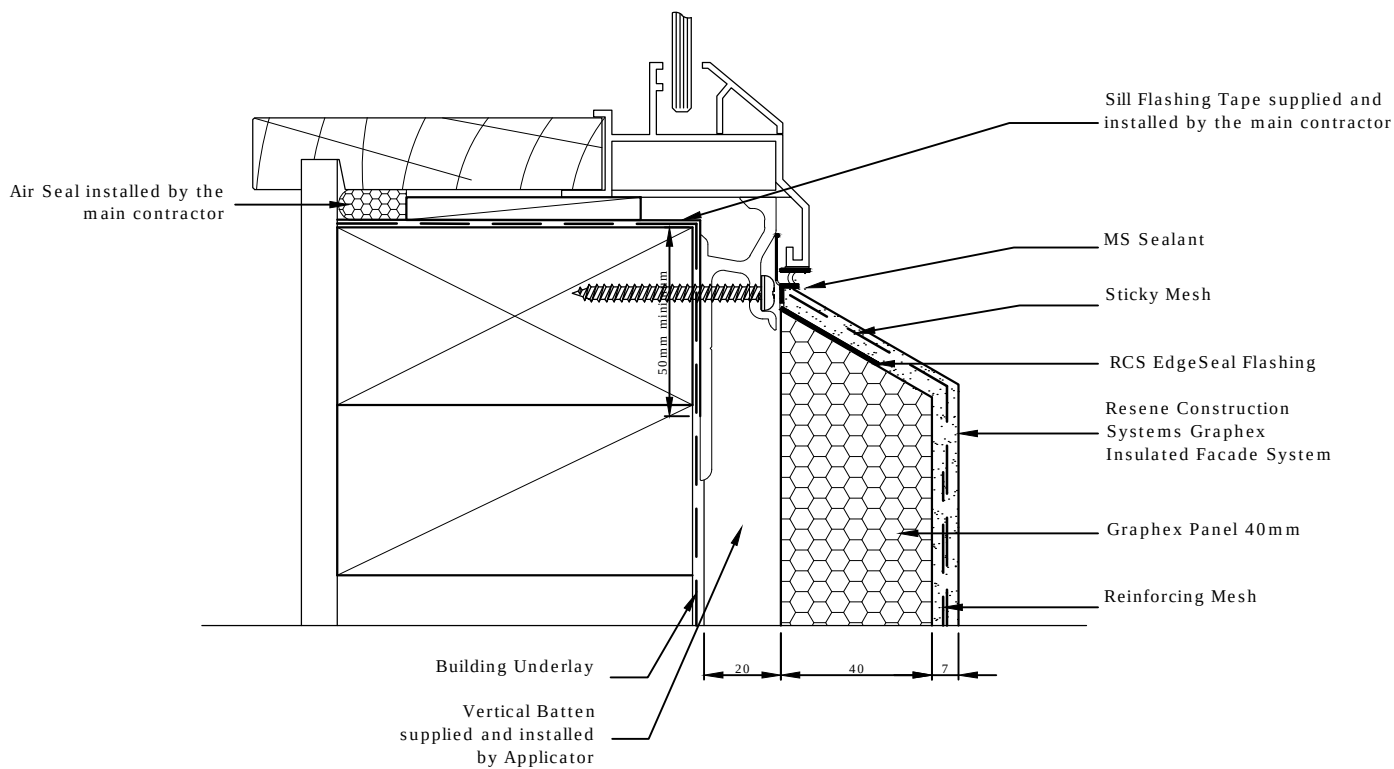
Substrate
Graphex Panel 40mm

Drawing Name
Internal Corner

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
70.04.00



Allow a 25mm Gap between the back of the joinery and external facing timber framing to allow the sill flashing to fit.

The RCS EdgeSeal Flashing holds a patent for its innovative design - Patent # 582317
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System
Graphex Insulated Facade System

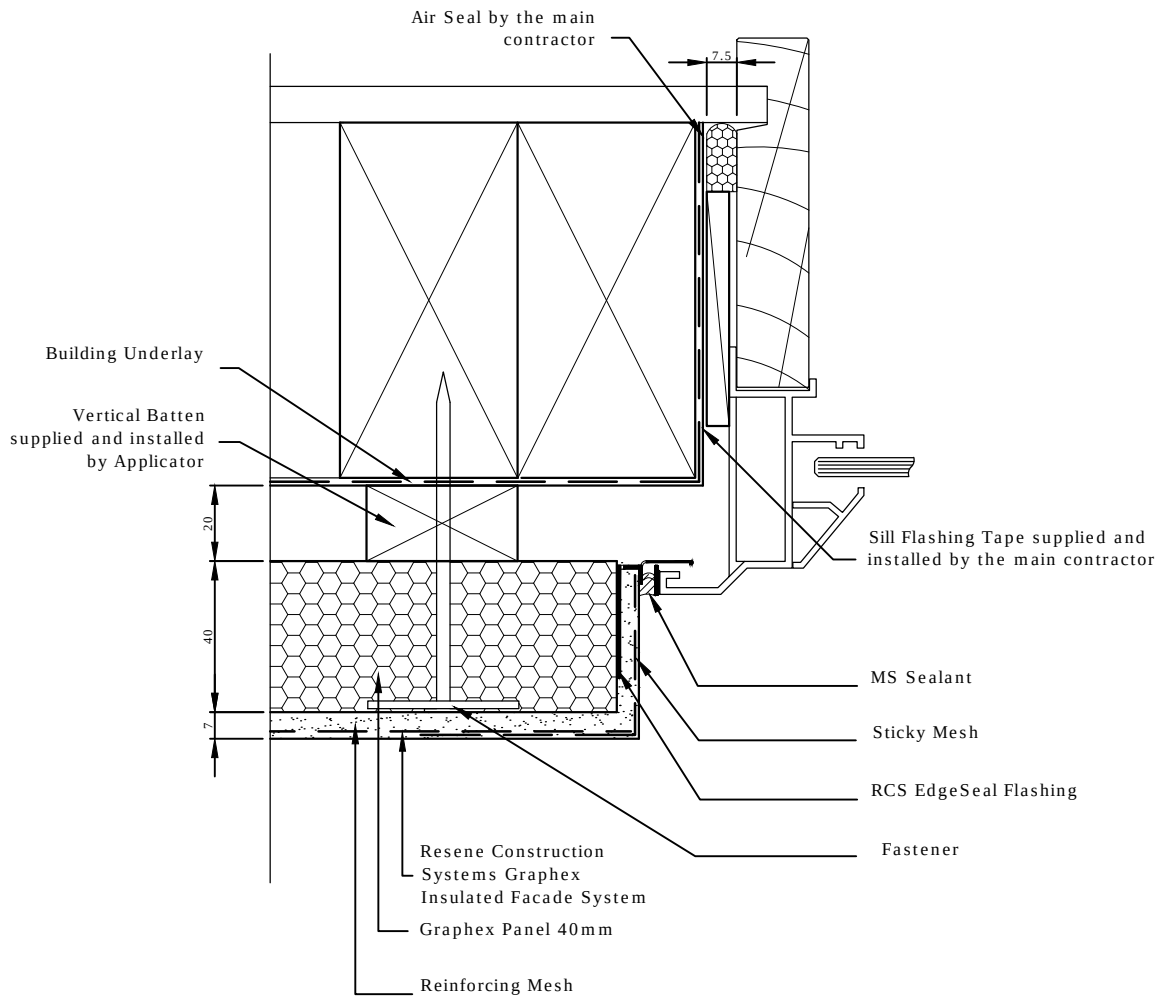
Substrate
Graphex Panel 40mm

Drawing Name
Window Sill

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
70.05.00



Allow a 25mm Gap between the back of the joinery and external facing timber framing to allow the jamb flashing to fit.

The RCS EdgeSeal Flashing holds a patent for its innovative design - Patent # 582317

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System
Graphex Insulated Facade System

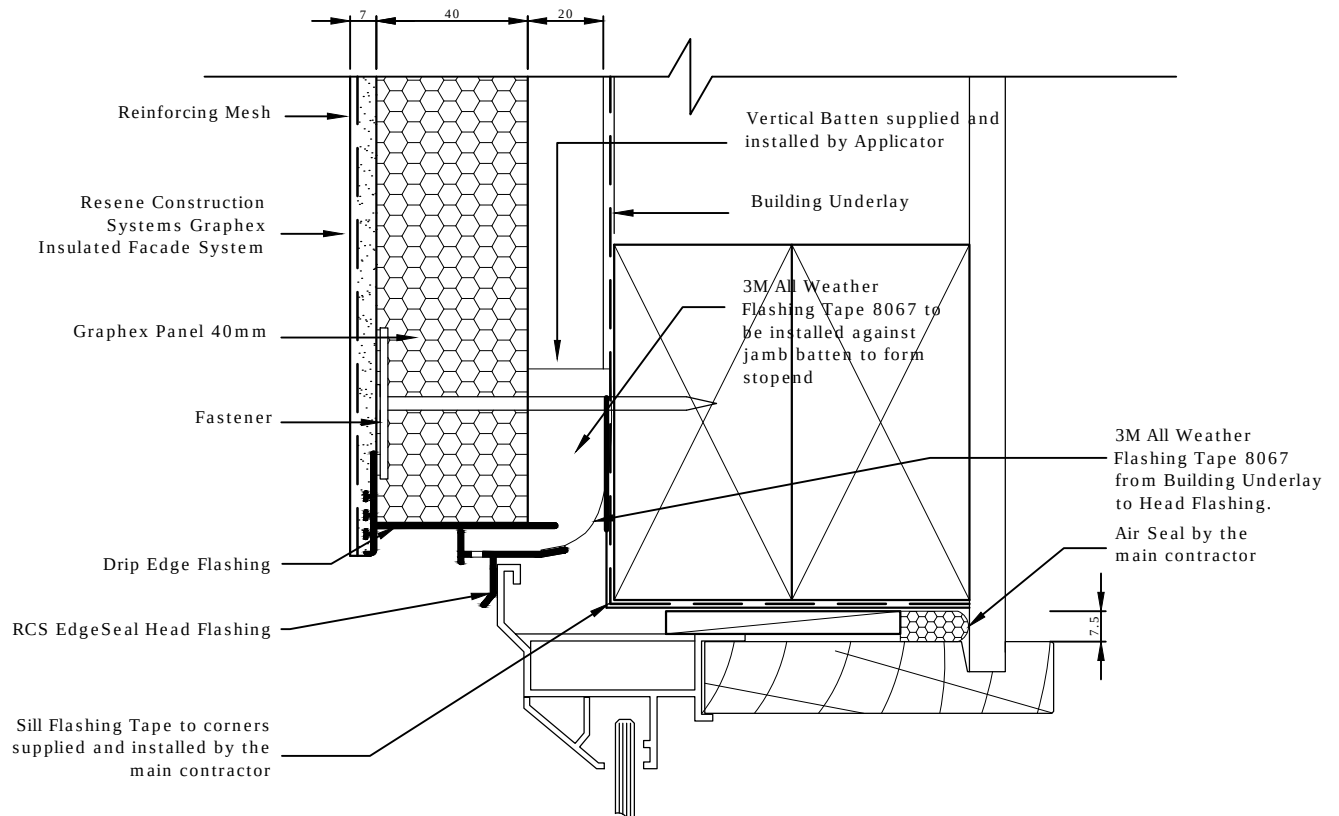
Substrate
Graphex Panel 40mm

Drawing Name
Window Jamb

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
70.06.00



RCS EdgeSeal Head Flashing to extend past the aluminium window by 10mm

The RCS EdgeSeal Head Flashing holds a patent for its innovative design - Patent # 588193
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System
Graphex Insulated Facade System

Substrate
Graphex Panel 40mm

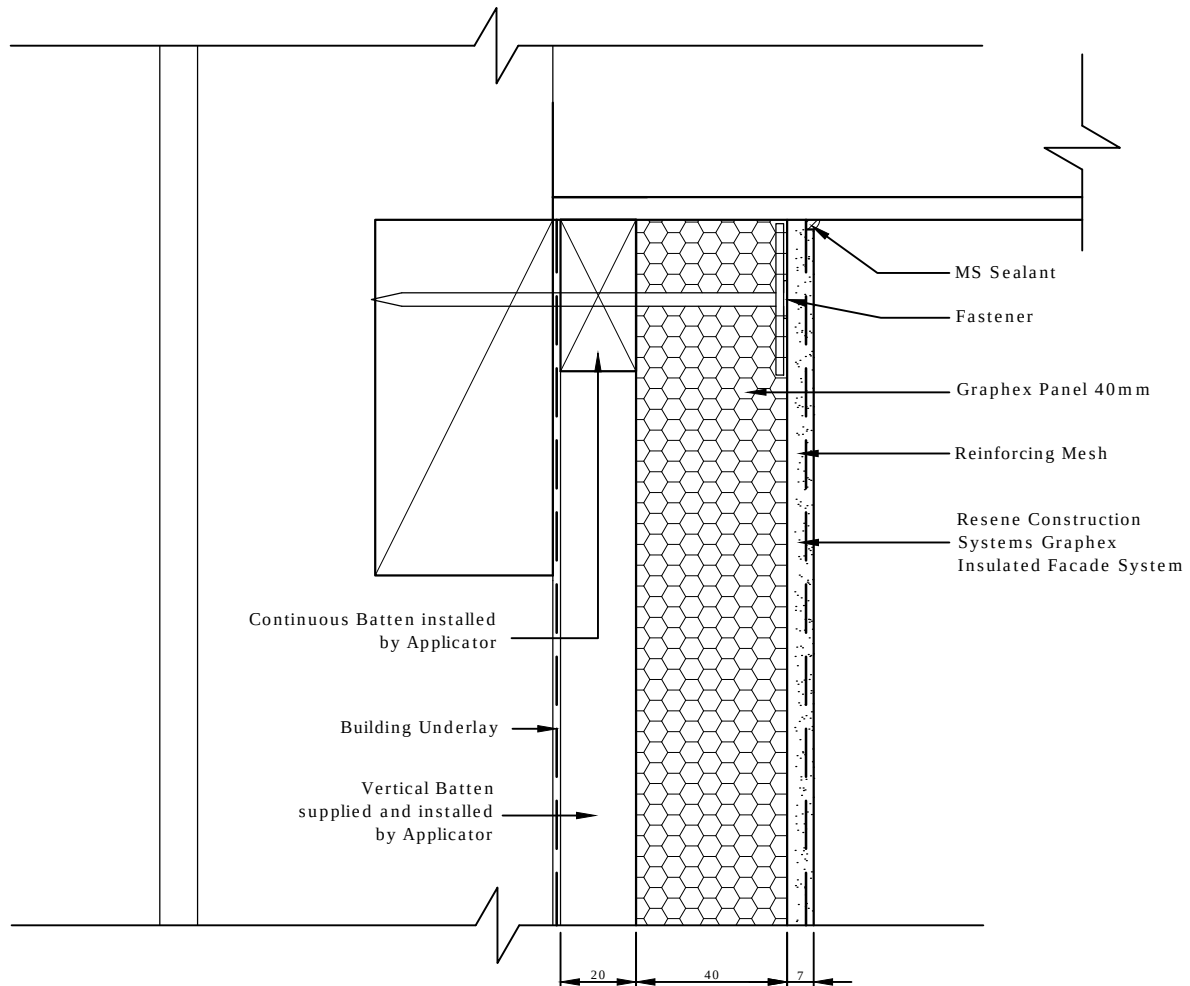
Drawing Name
Window Head - Option 1

Scale
1 : 2 @ A4

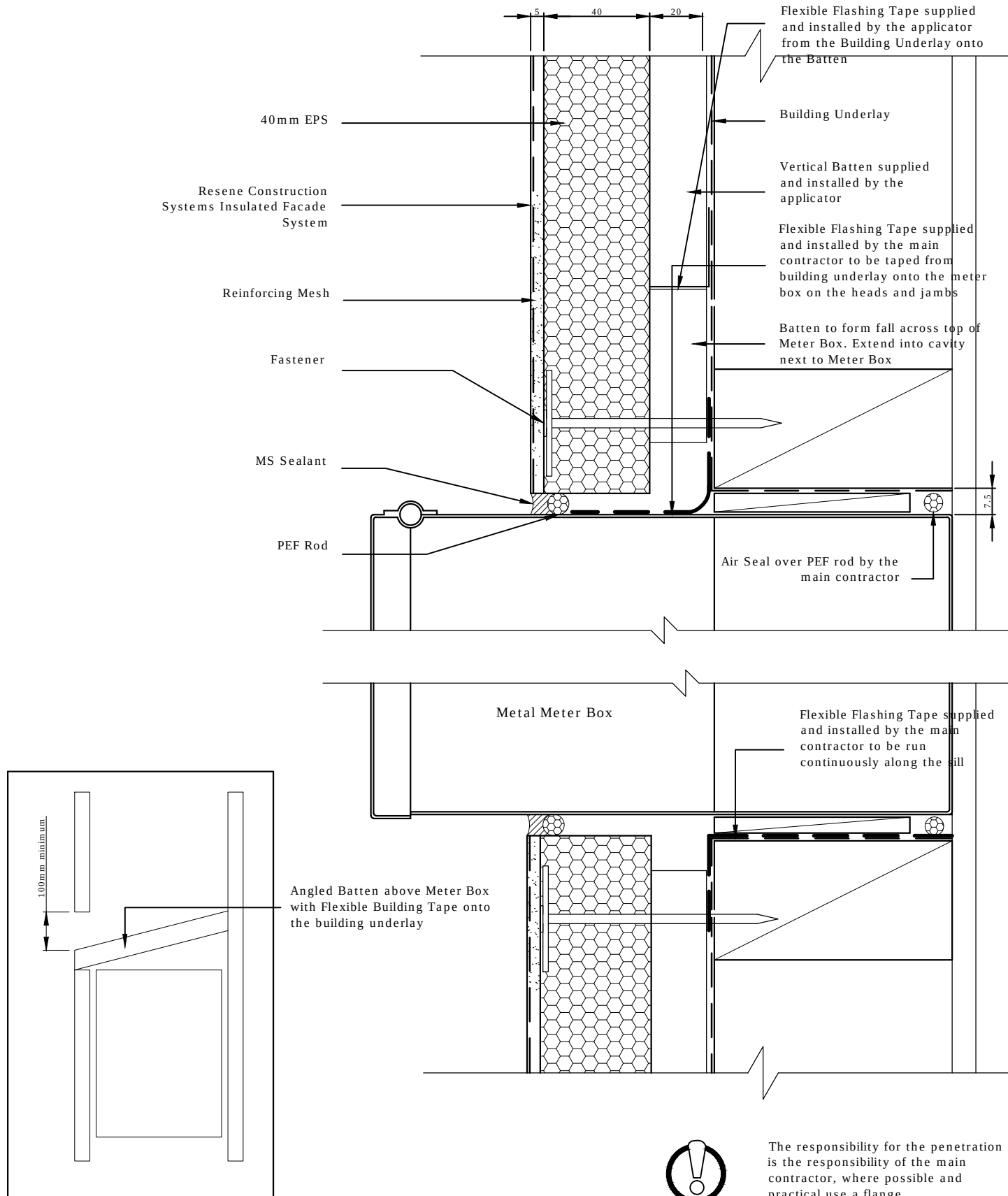
Date
12 November 2015

Sheet
70.07.00

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System
Graphex Insulated Facade System

Substrate
Graphex Panel 40mm

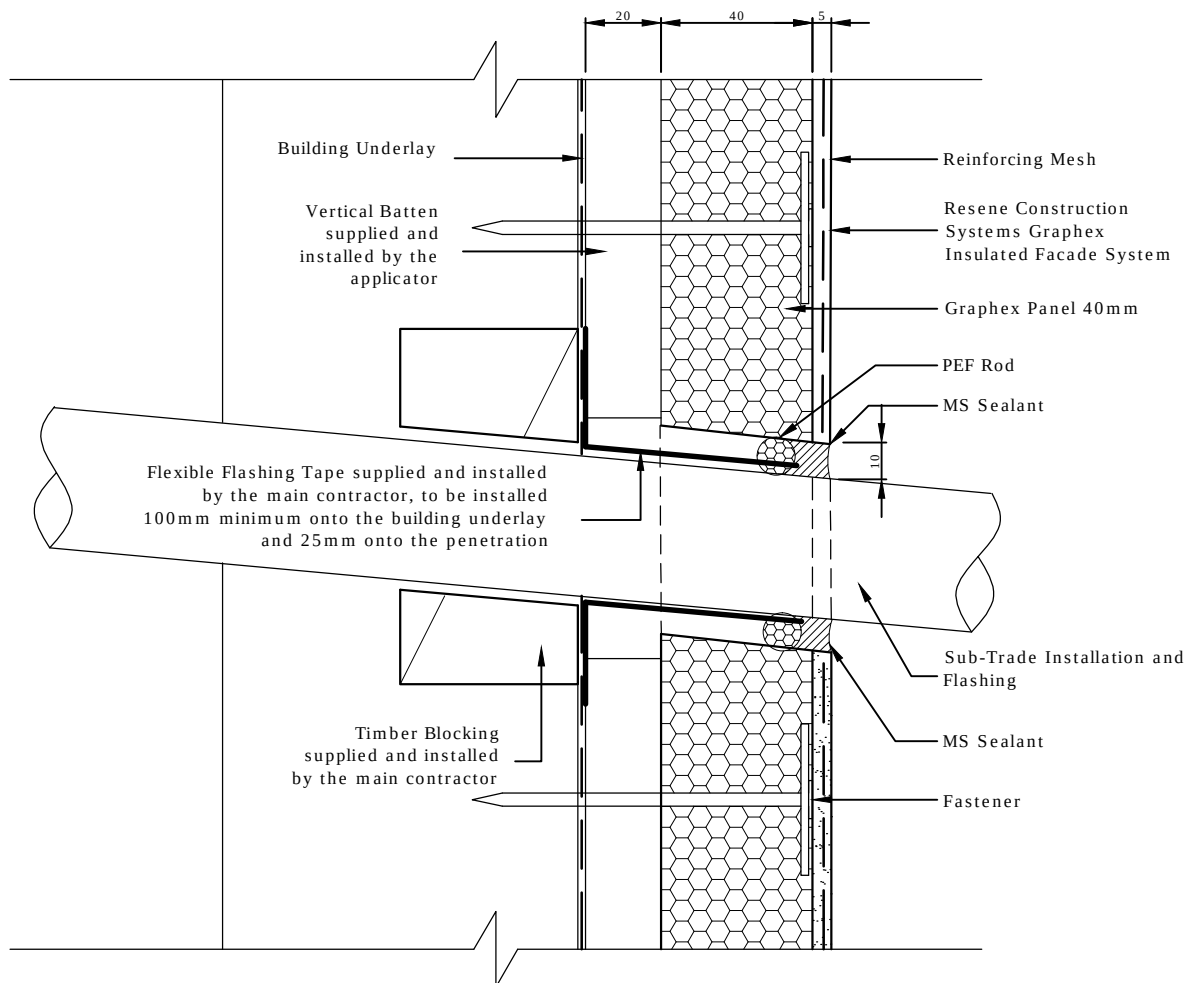
Drawing Name
Meter Box Penetration

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
70.12.10

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The responsibility for the penetration is the responsibility of the main contractor, where possible and practical use a flange.

It is important that there is adequate support for the penetration in the form of timber packing. The penetration should be angled slightly away from the cladding so any moisture is diverted away from the cladding.

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System
Graphex Insulated Facade System

Substrate
Graphex Panel 40mm

Drawing Name
Pipe Penetration

Scale
1 : 2 @ A4

Date
12 November 2015

Sheet
70.12.20

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SPECIFICATION

of work to be done and materials to be used in carrying
out the works shown on the accompanying drawings

Roberts

27 Peakes Road, St Johns Hill,
Wanganui

Job number: 180007

Date: 12 May 2017

CONSTRUCTION SCHEDULE

Construction Schedule to be read in conjunction with the "Factory Order". The Factory order is to take precedence over construction schedule. Any Alterations to the Construction Schedule / Consented documentation shall be forwarded to the local Council for approval.

For the following site/project information refer to the lower section of the title block on the plans:

- Snow zone, Earthquake zone, Corrosion zone, Roof type, Wall types & Wind Zone (Refer to bracing calculation sheet "building location" section for wind zone analysis)

These drawings to be read in conjunction with any supplementary engineer's documentation (i.e. Truss design, floor framing layout)

All construction to comply with NZS 3604, NZBC & local council policy.

All timber treatment to comply with NZS 3602

FOUNDATION:

Floor Slab: 100mm concrete (MPa as per details, at 28 days standard curing)

Foundations: Concrete (MPa as per details, at 28 days standard curing)
Rods and starters as per details

Where the DPM is likely to be damaged from the granular fill then protection shall be provided by no more than 25mm sand blinding in accordance with NZS 3604 clause 7.5.6.2.

ALL FRAMING (unless stated otherwise on the drawings)

SG8

Exterior walls: **H1.2**, Bottom plate - 90x45 & Double top plate - 90x45

Interior walls: **H1.2**, Bottom plate & Top Plate - 90x45, refer to ceilings for double top plate requirements

Bottom plate fixings: Lumberlok Bottom Plate Fixing Anchors as per manufacturer's specifications @ 900mm crs on all external walls and within 150mm of each end of the plate. 75mmx4mmØ shot fired fasteners @ 600mm crs and within 150mm of each end of the bottom plate to interior load bearing walls. DPC between bottom plate & floor slab (Refer to MiTek specification attached for specific bottom plate fixing details required for bracing & lintels).

WALL FRAMING:

Ground Floor

Exterior & Interior Loadbearing wall: 90x45mm studs @ 600mm crs

Dwangs Ext: 90x45 @ 800crs

Non loadbearing: 90x45mm studs @ 600 crs

Dwangs Int: 90x45mm @ 1350mm crs

Lintels: Lintels are shown on the Truss design. (All Lintels SG8 unless stated otherwise).

Building Wrap: **Watertight Plus building wrap** with Aluband flexible flashing tape

Building wrap to be strapped @ 300crs between dwangs.

INSULATION, ENERGY EFFICIENCY:

Refer to H1 Schedule, Energy Efficiency Calculations

Exterior Walls: **Pink Batts – R 2.4 Wall**

Ceilings: **Pink Batts – R 3.6 Ceiling**

Glazing: Double glazing to all windows, excluding garage

Air Seals: PEF Rod & Low expansion foam.

Lighting: All lighting recessed into ceilings to be closed and abutted type.

TRUSSED ROOF AREA: (An as built truss design will be provided at time of manufacturing)

Metal Tile - Battens: 50x40 SG6 H1.2 @ 370crs (Fixings in specification)

Trusses: @ 900crs, refer to truss design (H1.2 unless otherwise stated)

Fascia & Gutter system:

Refer to manufacturers specification attached, **provide Snow straps**

Down pipes: **Marley 80Ø PVC**

Soffits: 4.5mm Hardiflex to Ribbon boards, sprockets & packers ex50

CEILINGS:

Interior Walls: Walls running parallel to battens to be double top plate - 90x45 + 140x35

Battens: **"Rondo" metal ceiling battens @ 600 crs (#6 Gib Grabber Scavenger Head self tapping screws, no fixing clip).**

Finish garage: 13mm Gib board, Level 3 plaster finish

Flat Ceilings: 13mm Gib board throughout unless specified different on the plans & Level 4 finish to all rooms in flat ceiling areas

FLOOR FINISHES

Note: Floor surfaces of any space containing "sanitary fixtures or sanitary appliances must be impervious and easily cleaned." (Seal floor when Laundry is in garage)

Carpet: Non-slip and have a slip (wet) coefficient value of 0.55-0.70 for tufted or loop pile. (NZBC D1/AS1 Table 2) Floors to be carpet unless stated otherwise on plan, not including the garage.

Floor Tiles: Non-slip and have a slip (wet) coefficient value of 0.35-0.65 for grit finished ceramic tiles. (NZBC D1/AS1 Table 2)

Entry through external doors to have a max step of 190mm (Riser height and tread depth for all steps in one flight, shall be uniform within the tolerance of ± 5 mm measured at the centreline on straight flights and at the pitch line on curved and spiral flights.)

With outward opening doors, a landing shall be provide with a clear space of at least 400mm from the leading of the door and the full width of the landing.

Build up this area with AP40 and compact, to have a cross fall of no less than 1:100 and fall away from building. (By Others, Coefficient of friction, wet - 0.6 - 0.9)

WET AREAS

Aqualine Gib with Enamel paint finish, refer to details attached.

Waterproofing: Flooring to all first floor wet areas, bath plinths to be sealed with

"Wetseal" fibreglass waterproofing membrane BRANZ appraisal 372 (2000)

KITCHEN JOINERY

Bench top – **Melamine (High Pressure laminate)**, Cupboards – Melteca/Melamine

Bathroom Joinery

Top – Vitreous China, Cupboards – Polyurethane coated

Minimum Requirements for sinks:

Kitchen Sink: 300mm dia min X 125mm min depth. (As per NZBC G3/AS1)

Laundry tub: No less than 35 litres. (As per NZBC G2/AS1)

VENTILATION:

Mechanical ventilation to be discharged outside via the soffit to comply with NZBC G4/AS1. (**Manrose 120Ø FAN 0940, Manrose SF 150**)

Smoke Alarms (Hush type) To comply with NZBC F7/AS1. Smoke detectors to be fitted within 3.0m of sleeping areas and on Escape routes, as indicated on plan. (Proof of compliance will be required for final inspection and issue of Code Compliance Certificate).

WATER PIPES

Water pipe from hot water heater to be 15mmØ with no more than 2 litres total volume (as per NZBC G12/AS1 Table 4 and NZS 4305 cl. 3.2.1 and Table 5) and closed cell foam polymer insulation which is preformed to the shape of the pipe and not less than 13 mm thick, is acceptable material for preventing pipes less than or equal to 40 mm diameter from freezing (as per NZBC G12/AS1)

Acceptable pipe lengths as per NZS 4305 table 5

10 mmØ = 78ml/m (25m max, total)

15mmØ = 176ml/m (12m max, total)

20mmØ = 214ml/m (7m max, total)

NZBC 7.5 Watertightness

7.5.1 The water supply system shall be tested to ensure watertightness.

An acceptable testing method is to:

- Subject the hot and cold system to a pressure of 1500 kPa for a period of not less than 15 minutes, and
- Inspect the system to ensure that there are no leaks.

RAINFALL CATCHMENT AREA CALCULATION

Rainfall Intensity: as per Appendix A, E1/AS1

Gutter Type & Downpipe Size: As noted above in "Truss Roof area" note in Construction Schedule.

Cross Sectional Area: Refer to manufacturers specification attached

Roof Pitch: As noted in the project information on the plan.

Maximum Catchment Area: **0°-25° = 60m²** as per NZBC E1/AS1 Table 5

PRELIMINARIES AND GENERAL

THE PROJECT

The works are as described in this specification and as shown on the drawings.

SITE

The site of the works, the site address and the legal description are shown on the drawings. Confine access and work to the area of site indicated on the drawings.

BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004 to carry out any work not in accordance with the building consent. Refer the resolution of matters concerning compliance to the main contractor for direction. Where building consent approval is affected refer any change to the territorial authority.

STATUTORY OBLIGATIONS

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

BUILDING CONSENT

Obtain the original or copies of the building consent form and documents from the main contractor and keep on site. Liaise with the territorial authority for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the territorial authority and the owner. Producer statements to be in the form required by the Territorial Authority to comply with the Building Act.

SET-OUT AND DATUM

Set out the works to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.

PREPARATION AND GROUNDWORK

Documents referred to in this section are:

NZBC	B1 Structure
	B2 Durability
	E2 External Moisture
NZS 3604	Timber framed buildings
OSH: Approved code of practice for safety in excavation and shafts for foundations	

GRANULAR FILL

Approved screened crushed gravel or scoria, graded in size from 20 mm to 7 mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

SURFACE PREPARATION

Comply with NZS 3604 section 3.5. Remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area to be built on.

STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials.

GENERAL EXCAVATION

Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.

FOUNDATION EXCAVATION

Take foundation excavations to depths shown on plans. Keep trenches plumb and straight, bottoms level and solid, stepped as detailed and clean and free of water.

INADEQUATE BEARING

If supplied, Engineers Ground Bearing and Foundation report takes precedence over the following:

When bearing is inadequate, excavate further and backfill as per below.

Confirm any changes with the territorial authority.

Below slabs on grade: Hardfill

Below footings: 10 MPa concrete

Service trenches: Hardfill

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.

GRANULAR BASE FOR SLABS

To conform with NZS 3604 (Details noted on the plans). Consolidate with a vibrating roller ready to receive a dampproof membrane.

GENERAL BACKFILLING

Obtain written confirmation from the owner & the main contractor before using any excavated material (An Engineer will need to be involved and Council Approval will be required. Compact approved backfilling in 150 mm layers with the last 200 mm in clean topsoil, lightly compacted and neatly finished off to a Maximum depth of 600mm.

CONCRETE

Documents referred to in this section are:

NZS 3101	Concrete structures standard, Part 1 The design of concrete structures.
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel reinforcing materials

FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss.

DAMPPROOF MEMBRANE

0.25 mm minimum polyethylene to NZS 3604 clause 7.5.4 Damp-proof membrane.

Apply polythene membrane to prepared base course with 150 mm laps between sheets. Tape seal laps and penetrations with 50 mm wide pressure sensitive plastic tape.

REINFORCEMENT

Bars to AS/NZS 4671. Grade Ductility Class E, all deformed other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to AS/NZS 4671.

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109 clause 3.3 Hooks and bends. Do not rebend bars without written approval.

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in NZS 3109 clause 3.6 Spacing of reinforcement.

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on the drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101 table 5.5 minimum required cover. Fix chairs for top reinforcement in slabs at 1.0 metre centres or to ensure adequate support. Cover tolerances to NZS 3109 clause 3.9 Tolerances for reinforcement.

Length of laps where not dimensioned on the drawings in accordance with the Manufacturers Specification. Increase laps of plain round steel by 100%. Tie all lapping bars to each other.

REINFORCEMENT LAPS

<u>Bar Diameter</u>	<u>Lap</u>
10 mm	400 mm
12 mm	500 mm
16 mm	650 mm

TYING WIRE - Mild drawn steel wire not less than 1.2 mm diameter.

SPACERS AND CHAIRS - Precast concrete or purpose made moulded PVC to approval. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

PRE-PLACEMENT INSPECTION

Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the territorial authority inspector.

NORMAL CONCRETE

Normal concrete 20 MPa grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

PRESCRIBED MIX CONCRETE

Prescribed mix concrete 17.5 MPa grade minimum strength, using either separate batching of sand and builder's mix or coarse aggregate to NZS 3104 table 3.1 Grading recommendations for combined and uncombined coarse aggregates.

Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.

Set up and supervise pump operation, placing and compaction of the mix to NZS 3109 clause 7.4 Handling and placing and 7.6 Compaction. Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.

Use power operated vibrators on foundations, vertical constructions and beams.

Concrete slab-on-ground floors in timber buildings constructed to NZS 3604 clause 7.5 lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to NZS 3109 clause 104 Surface tolerances.

CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to allow for expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

CARPENTRY

Documents referred to in this section are:

AS/NZS 1748	Mechanically stress-graded timber
AS/NZS 1859	Reconstituted wood based panels, 1859.1: Particleboard
AS/NZS 2269	Plywood - Structural
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber framed buildings
AS/NZS 1328 1&2	Glued laminated structural timber
NZS 3631	New Zealand national timber grading rules

Refer to Production Specification for Durability requirements.

TIMBER FRAMING, FOR INTERIOR USE

Timber treatment as per "All Framing" section, machine stress graded timber to AS/NZS 1748, with moisture content at supply of 18% or less.

TIMBER FRAMING, FOR EXTERIOR USE

Timber treatment as per "All Framing" section, machine stress graded timber to NZS 3631 and to NZS 3602, table 1 with moisture content to NZS 3602 table 4

CEILING BATTENS

GIB® Rondo™ Galvanised Steel Ceiling Battens

TIMBER TRUSSES

Moisture content at supply: 18%.

DAMPPROOF COURSE

2-ply/3-ply Kraft felt strip saturated and coated with bitumen.

NAILS

Steel, stainless steel and galvanised steel of pattern to suit the location.

Type to NZS 3604 section 4 Durability, and of the size and number for each particular types of joint as laid down in the nailing schedules of NZS 3604 sections, 6 Foundations, 7 Floors, 8 Walls, 9 Posts, 10 Roof framing and 15 1.5 kPa and 2 kPa snow loading. Except that when hand driving nails into Timber the nail lengths and diameters should be generally as for power driven nails.

BOLTS AND SCREWS

Steel, stainless steel and galvanised steel of pattern to suit the location.

NAIL PLATES

As per manufacturer's design for the particular locations as shown on the drawings.

CONNECTORS

Galvanised steel connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

MOISTURE CONTENT

Maximum allowable equilibrium moisture content (EMC) for framing supporting interior linings 18%

FRAMING WALLS

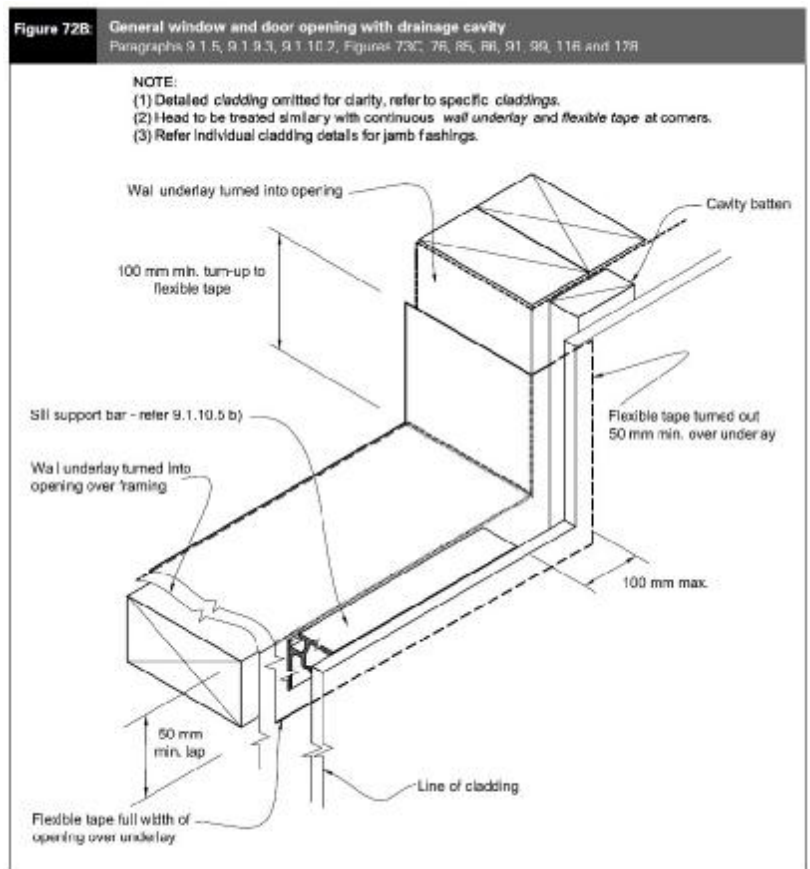
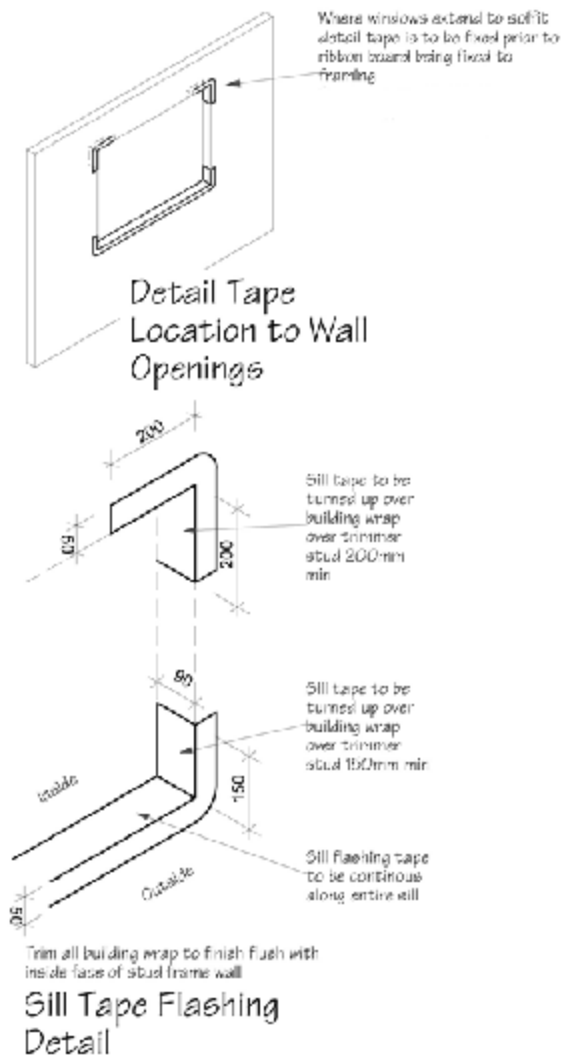
Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604 sections 8 & 15.

FRAMING ROOFS

Frame to required loading and bracing complete with valley boards, ridge boards and purlins/battens. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604 sections, 9 Posts, 10 Roof framing and 15 1.5 kPa and 2 kPa snow loading.

INSTALLING CEILING BATTENS

Fabricate and fasten to as per manufacturers recommendation.



ALUMINIUM WINDOWS AND DOORS

DOCUMENTS

Documents referred to in this section are:

NZS 3604	Timber framed buildings
NZS4211	Specification for Performance of Windows
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications

WINDOW AND DOOR SECTIONS

Form all aluminium members from extruded sections. Folded sections are restricted to flashings and concealed members only.

FLASHINGS GENERALLY

Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail jamb facings by 20 mm at each end.

FIXINGS

Ensure all fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

CONFIRM PREPARATION OF WALL OPENINGS

Confirm that wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall cladding building wrap to openings finished and dressed off ready for the installation of window and door frames
- claddings neatly finished off to all sides of openings
- interior linings neatly trimmed ready for installation of jamb liners and completion of air seals to all sides of openings
- installation of flashings (those which are required to be installed prior to frames, including Flexible flashing tape).

FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's and WANZ Aluminium window handbook requirements, plumb, true to line and face, weathertight and with all openings operating freely.

COMPLETE AIR SEAL

Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods, applied deep within the reveal to completely fill the gap between joinery and structural framing. Ensure that in combination with the internal linings a complete air seal is created.

WINDOWS AND DOORS TYPE

Manufacturer:	First Aluminium (ChCh)
Type/model:	First Aluminium Extrusion

WINDOW AND DOOR JAMB LINERS, TIMBER

Timber species:	Pine
Grade/treatment:	Finger jointed H3
Thickness:	ex40mm
Finish:	Paint grade
ORGANIC POWDER COATING FINISH	
Minimum thickness:	40 microns

GLAZING

Documents referred to in this section are:

NZBC B1/AS1	Structure, 7.0 Glazing
NZBC F2/AS1	Hazardous building materials, 1.0 Glazing
NZBC F4/AS1	Safety from falling, 1.0 Barriers in buildings
AS/NZS 2208	Safety glazing materials in building
NZS 3604	Timber framed buildings

NZS 4223

Glazing in buildings

Part 1: The selection and installation of glass in buildings

Part 3: Human impact safety requirements

Part 4: Dead, wind and snow loading

NZS 4211

Performance of windows

AS/NZS 4666

Insulating glass units

AS/NZS 4667

Quality requirements for cut-to-size and processed glass

GLASS

Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

-Clear float glass: Clear annealed transparent float glass

-Patterned glass: Translucent, annealed, rolled glass with a decorative pattern on one surface.

-Laminated glass: Grade A safety glazing material to AS/NZS 2208 with PVB or CIP resin interlayer.

-Toughened glass: Grade A safety glazing material to AS/NZS 2208.

SAFETY GLASS

All windows noted with "SG" on the elevations require Grade A safety glass. (All glazing in bathrooms <2m requires Grade A safety glass)

MIRROR GLASS

Float mirror glass to NZS 4223, part 1, clause 101.2.2.2: Silvering quality (selection S), with silver and copper plating and 2 coats of protective paint.

GLASS SCREENS

Proprietary shower/bath screens, formed to shape before toughening, complete with matching hardware.

GLAZING TAPE AND GASKETS

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

MIRROR ADHESIVE

Adhesive mirror-mastic and double-sided adhesive tape.

INSTALL GLASS SCREENS

Install shower and bath screens and doors to manufacturer's requirements. Fix wall channel with silicone sealant.

Table 3.7 – Glazing protecting a difference in level in any building

Ceiling									
		Transom or crash rail							
Floor or seat level									
		1000 max.		750 min.		1000 max.		450 min.	
		500 min.		550 max.		500 min.		500 max.	
		>500		>500		>500		>500	
		TYPE A		TYPE B		TYPE C			
Household units		Safety glazing material to table 3.1 or annealed glass to column 1 of table 3.2		Safety glazing material to table 3.1 or annealed glass to column 2 of table 3.2 with 5 mm minimum thickness ¹		Select glass thickness by reference to wind design charts in Part 4. Table 3.3 of this Part is the minimum requirement. ¹			
All other buildings ²		Safety glazing material to table 3.1 or annealed glass to column 2 of table 3.2		Safety glazing material to table 3.1 or annealed glass to column 3 of table 3.2 with 5 mm minimum thickness		Select glass thickness by reference to wind design charts in Part 4. Table 3.3 of this Part is the minimum requirement. ¹			

* Crash rails should be designed to discourage people from sitting on them.

† If a transom is fitted, the upper panel can be type C.

‡ Refer also to section 307.

§ For high-risk activity areas, refer to 303.10. For stairwells, refer to section 313.

NOTE –

(1) Thickness of glazing materials shall also be checked for wind loading.

(2) Glazing materials shall be contained in accordance with 303.2.

(3) For opening windows – refer to Clause F4.4.1 of the NZBC for window opening restrictions not related to this Part.

NZS 4223: Part 3: 1999

INSULATION

Documents referred to in this section are:

NZBC H1/AS1	Energy efficiency, 2.0 Building thermal envelope
NZS 4214	Methods of Determining the total thermal resistance of parts of buildings
NZS 4218	Energy efficiency – Small building envelope
NZS 4243	Energy efficiency – Large buildings

FIT THERMAL INSULATION

Lay, install, fit and fix insulation to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope. Install in housing to NZS 4218 and in large buildings to NZS 4243.

Friction fit insulation in place to completely fill the whole of the cavities with no gaps and with no folds. Slightly oversize length for friction fit and cut across pad and fill cavity. Cut smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents. No clearance required to CA type lighting fixtures.

THERMAL INSULATION, WALLS

Location:	Exterior walls (excluding garage)
Brand:	Refer to H1 Schedule
R Value:	Refer to H1 Schedule, Energy Efficiency Calculations

THERMAL INSULATION, CEILING

Location:	Ceilings (excluding garage)
Brand:	Refer to H1 Schedule
R Value:	Refer to H1 Schedule, Energy Efficiency Calculations

GIB® PLASTERBOARD LININGS

Refer to GIB® EzyBrace™ Systems installation information attached to specification.

Documents referred to in this section are:

AS/NZS 2588 Gypsum linings in residential and light commercial construction - Application and finishing, Part 1: Gypsum plasterboard

BRANZ technical paper P21: A wall bracing test and evaluation procedure

MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section are:

General: GIB® Site Guide

Wet area: GIB Aqualine® Wet Area Systems

Bracing: GIB EzyBrace® Systems

Ceilings: GIB® Rondo® Metal Batten Systems

GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS 2588.

CEILING BATTENS

GIB® Rondo™ galvanised steel ceiling battens and perimeter channel and GIB® Direct Fix Clip. Install in accordance with GIB® Rondo™ Metal Ceiling Batten Systems.

SCREWS

GIB® Grabber™ drywall screws.

NAILS

GIB® Nails (gold passivated).

TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on paper tape and galvanised steel trims and edges and/or GIB® UltraFlex high impact corner mould.

ADHESIVE

GIBFix® All Bond wallboard adhesive.

JOINTING COMPOUND

Bedding compound: GIB Tradeset®, GIB® Lite Blue and GIB ProMix® Taping compound

Finishing compound: GIB ProMix® GIB ProMix®, Lite, GIB® All Purpose and GIB Plus 4®

JOINTING TAPE

GIB® paper jointing tape.

CHECK SUBSTRATE

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Moisture levels not to exceed 18% at the time of lining.

MOISTURE CONTENT

Maximum allowable moisture content in accordance with AS/NZS 2589.1 for:

Framing at lining: 18% for plasterboard linings

PROTECT

Protect all surfaces, cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage.

LEVELS OF FINISH

Provide the scheduled plasterboard surfaces to the levels of finish specified in AS/NZS 2589

Before commencing work, agree in writing upon the expectation for the final quality of finish. The specified level of finish for each area should be appropriate for the type of decoration and the type and angle of the primary source of illumination specified in that area.

TILING

Documents referred to in this section are:

NZBC D1/AS1 – Slip resistance

AS 2358 Adhesives - For fixing ceramic tiles

AS 3740	Waterproofing of wet areas within residential buildings
AS 3958	Ceramic tiles, 3958.1: Guide to the installation of ceramic tiles
BS 6431	Ceramic floor and wall tiles
BRANZ	Good practice guide: Tiling

QUALIFICATIONS

Carry out tiling work using competent tilers, experienced with the materials and techniques specified.

TEMPERATURE

Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.

SUBSTRATE

Ensure that all services and accessories are in place and located to suit the tile layout, with the substrate required for tiling work. Commencement of the work means the substrate and environment are accepted by the tile layer as satisfactory.

CONCRETE FLOORS PREPARATION

Remove from the surfaces all contaminants such as paints, oils, release and curing compounds. Remove all projections, unevenness and loose material to leave a clean, dust and dirt-free surface. Remove all existing finishes down to the concrete & prepare surfaces and carry out the tiling work in accordance with AS 3958.1, as modified by BRANZ Good practice guide: Tiling.

LIQUID WATERPROOFING MEMBRANE (refer to Construction Schedule - "Wet Areas" for system used)

Install waterproofing membrane between the tile adhesive and the substrate. Reinforce all junctions of the waterproofing membrane as per the manufacturer's recommendations. Install waterproof membranes as follows: -

To walls behind bath - Two tiles high

TILE ADHESIVE

To BS 6431, parts 1 to 23 inclusive & AS 2358.

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

Apply and float thick bed cement-based adhesive to a maximum 6 mm bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press tiles and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.

GROUT

Cement based, compressible and to suit the particular location and use.

Remove spacers. Prepare joints, mix and apply proprietary grout and finish off to the grout manufacturer's requirements. Grout to finish uniform in colour, smooth and without voids, pinholes or low spots.

MOVEMENT CONTROL JOINT SEALANT

To BRANZ Good practice guide: Tiling, section 5.0.

CARPETING

Documents referred to in this section are:

AS/NZS 2455.1

Textile floor coverings - Installation practice, Part 1: General
The New Zealand Carpet Manufacturers' Association Conditions of
Warranty and installation guide

QUALIFICATIONS

Carpet layers to be experienced competent workers, familiar with the materials and the techniques specified and with AS/NZS 2455.

EDGE GRIPPER, TAPES, FIXING BARS

To AS/NZS 2455.

BINDER BARS

Anodised aluminium section with a fluted face.

SUBSTRATE

Before starting work inspect the substrate to ensure it will allow work of the required standard and that all fittings and fixtures around which the carpet is to be scribed, are in place.

PROTECTION

Protect adjoining work surfaces and finishes during installation and make good any damage to same.

TAPE

Tape for binding and seaming to be the type and width required by AS/NZS 2455 to suit the specified carpet and the standard of performance required.

LAYOUT

Plan the carpet layout so that seams run lengthways, traffic runs along the seam, light from windows is not across the seam and pile faces away from the main natural light source.

TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

PREPARE FLOOR SURFACE

Prepare floors for laying to AS/NZS 2455 requirements.

INSTALLATION, UNDERLAY

Installation to AS/NZS 2455 Lay at right angles to the carpet direction.

INSTALLATION, TAPED JOINTS

Tape carpet joints, fix grippers to floor, install underlay and carpet, to AS/NZS 2455.

FIX TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to AS/NZS 2455. Ensure that all junctions with other materials are neatly formed, with bars and trims securely fastened to the substrate, 20 mm from each end and at maximum 100 mm centres.

PAINTING

Documents referred to in this section are:

Resene: One-Line Specifications and Product Data Manual

PAINT TYPES

All paint coatings to be **Resene** products (which are guaranteed for consistency and performance under ISO 9001 and APAS) prepared, mixed and applied as directed in the One-Line Specifications and Product Data Manual.

GAP FILLERS

Use suitable gap fillers to match the surface being prepared. Any special primers required of the fillers must be satisfied. Refer to **Resene** surface preparation sheets in the One-Line Specifications and Product Data Manual.

INSPECT

Inspect all surfaces to be painted and report any that will not, after the preparation as laid down in the **Resene** surface preparation sheets; allow work of the required standard.

PRIMING AND SEALING

Ensure that all priming and sealing work necessary before or during construction is carried out when required.

ENVIRONMENTAL CONDITIONS

Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of **Resene**.

SHARP EDGES, CRACKS AND HOLES

Sharp edges, cracks and holes if present: remove and/or repair as outlined in the preamble to the **Resene** One-Line Specifications and Product Data Manual.

PREPARE ALL SURFACES

Prepare all surfaces to be coated to the requirements of the **Resene** surface preparation sheets. Use suitable gap fillers to match the surface being prepared. Any special primers required of the fillers must be satisfied. Refer to **Resene** surface preparation sheets.

APPLICATION

Apply paint by brush and/or roller to the requirements of **Resene** to obtain a smooth, even coating of the specified thickness, uniform gloss and colour. Do not spray on site without express permission.

RESENE SPECIFICATIONS

Refer to the **Resene** One-Line Specifications and Product Data Manual for surface preparation, coating sequence and application requirements as they apply to each system. Correct defective work immediately, with any recoating following the system's requirements.

SCUFF BETWEEN COATS

Between all coats remove any dust pick-up, protruding fibres and coarse particles.

FINISHED PAINT SURFACES

All finished paint surfaces to show uniformity of gloss and colour, to have the correct thickness for each coat, and freedom from painting defects such as tackiness and conspicuous brush marks. Finished work to be clean and free of any disfigurement.

PAINT SYSTEMS TO WET AREAS (Plasterboard firstly apply a sealer coat)

Undercoat & Top Coat:	Lustercryl D310	walls/ceilings
Trim:	Lusterglo	architraves, skirting, sills

PAINT SYSTEMS TO INTERIOR AREAS

Undercoat:	Resene ceiling "Flat white"	walls/ceilings
Top coat:	Resene Acrylic "Low sheen"	walls/ceilings
Trim:	Lusterglo	architraves, skirting, sills

PAINT SYSTEMS TO EXTERIOR AREAS

Undercoat:	Resene SpaceCote "Flat white"
Top coat:	Resene SpaceCote "Flat white"

HOT AND COLD WATER SYSTEM

Documents referred to in this section are:

NZBC G12/AS1	Water supplies
AS/NZS 2642	Polybutylene pipe fittings
NZS 3501	Specification for copper tubes for water, gas and sanitation
NZS 4606	Storage water heaters
NZS 4607	Installation of thermal storage electric water heaters
NZS 4617	Tempering (3-port mixing) valves
DIN 8077	Polypropylene (PP) Pipe dimensions
DIN 8078	Polypropylene (PP) Pipes Types 1, 2 & 3, General Quality

NZS 4305

Energy efficiency domestic hot water systems

Plumbers, Gasfitters and Drainlayers Act 2006

Note: Floor surfaces of any space containing sanitary fixtures or sanitary appliances must be impervious and easily cleaned. (Seal floor when Laundry is in garage)

QUALIFICATIONS

Plumbers to be experienced competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, familiar with the materials and techniques specified.

WATER MAIN POLYETHYLENE

High density polyethylene pipe complete with rubber ring compression type fittings.

POLYBUTYLENE WATER PIPE

Polybutylene tubing to AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched.

EXPOSED PIPES

Chrome plated copper pipe with chrome plated brass nuts and fittings.

Faucet hoses covered with stainless steel braid and fitted with stainless steel nuts.

White polyethylene composite pipe with white nuts and accessories.

Selected pipework finish to include escutcheon plates and bends and elbows protruding from walls or fittings. All cold water pipework installed in external walls or exposed to the elements to be lagged and protected from frost.

VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or **temperature valve, pressure relief valve and** isolating valves to NZBC G12/AS1: Water supplies. (Set to 55°) **The storage water heater control thermostat shall be set at a temperature of not less than 60° C to prevent the growth of Legionella bacteria.**

15mm copper pressure relief valve from HWC (100mm max straight or bent) to discharge into 20mm @ 1:40 copper relief drain. The drain to discharge to over GT with 25mm air gap. (As per NZBC G12/AS1 cl.6.7 and Fig 12)

Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions.

ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To NZS 4606.3, ceramic-coated steel thermal storage cylinder, insulated and complete with fittings required for installation by the manufacturer.

Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.10. Valve-vented systems to NZS 4607.

ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

WATER MAIN

Lay a minimum of 500 mm below ground level (600 mm under driveways) from the **onsite supply** to the building. Lay marker tape above the water main in backfill.

POLYBUTYLENE/POLYETHYLENE WATER SUPPLY

Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, and jointed to the pipe manufacturer's specifications, all to NZBC G12/AS1. Conceal pipework and pressure test before the wall linings are fixed.

INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes in accordance with the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of studs. Where hair felt is used, wrap around pipes in two layers in opposite directions and secure with galvanised steel wire ties.

PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

INSTALL TAPS AND FAUCETS

Install taps and faucets in accordance with the tap manufacturer's requirements. Flush out on completion. Check that washers or ceramic discs are operating correctly.

TESTING OF PLUMBING

NZBC G12/AS1 7.5 Watertightness

7.5.1 The water supply system shall be tested to ensure watertightness. An acceptable testing method is to:

- Subject the hot and cold system to a pressure of 1500 kPa for a period of not less than 15 minutes, and
- Inspect the system to ensure that there are no leaks.

WATER MAIN

Material: Polyethylene
Internal diameter: (ID)20mm/ (OD)25mm

WATER PIPE

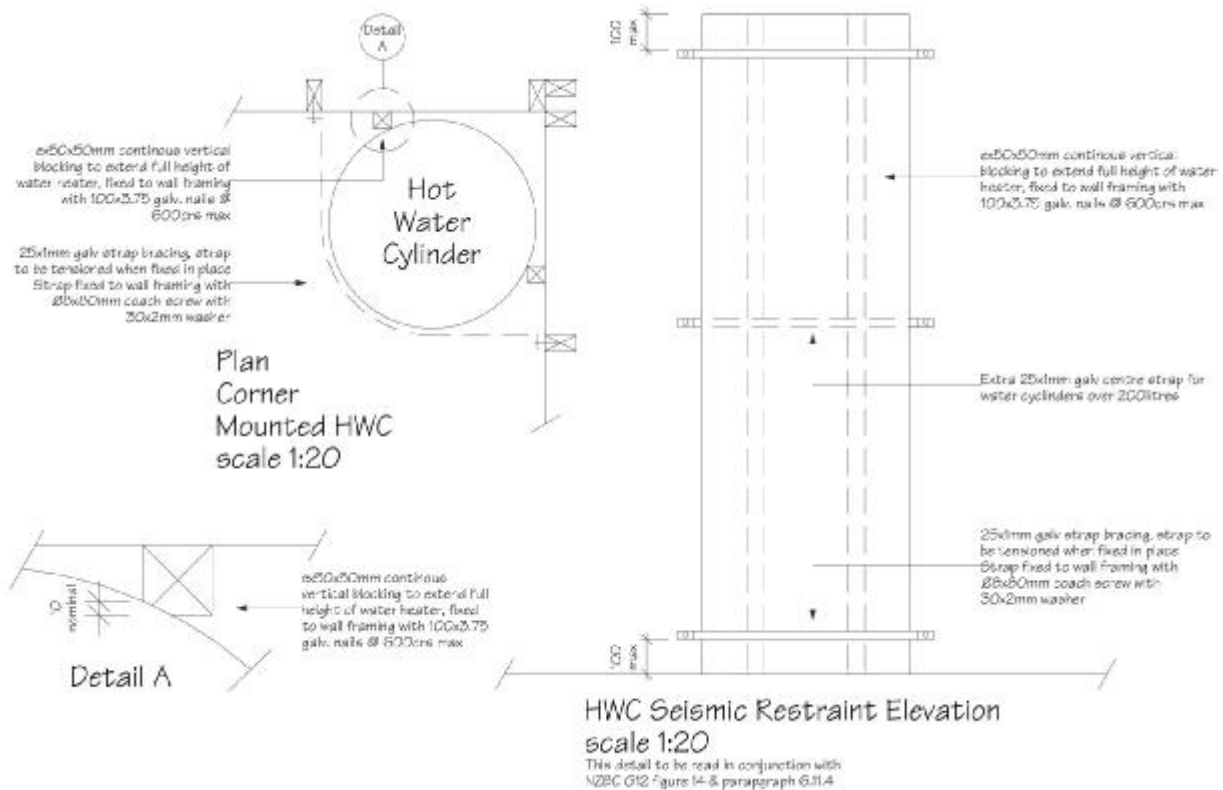
Material: Polybutylene
Nominal bore: (ID)20mm/ (OD)25mm

INSULATION FOR HOT WATER PIPES

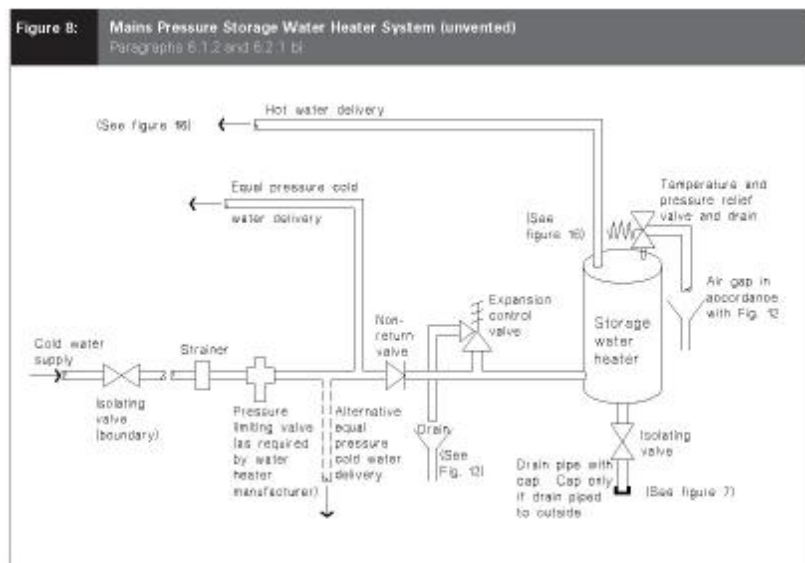
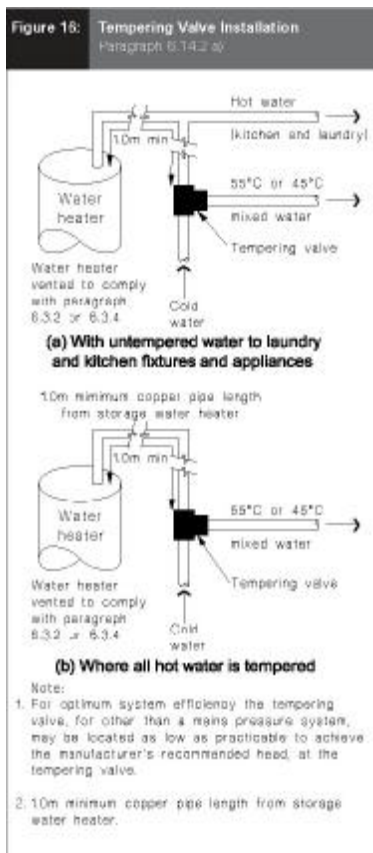
Brand/type: Euro lagging
Inside diameter: 16/22 mm

NZBC G12/AS1

Table 7: Water Supply Pipework Support Spacing Paragraph 7.1.3			
Pipe material	Pipe diameter (mm)	Maximum distance between supports (m)	
		Vertical pipe	Graded and horizontal pipe
Copper	10 – 15	1.5	1.2
	20 – 25	2.0	1.5
Galvanised steel	15 – 20	2.0	1.5
	25	3.0	2.5
uPVC	15 – 20	2.0	1.0
	25	2.4	1.2
Polyethylene and polybutylene (cold water supply)	15 – 20	1.5	0.75
	25	1.8	0.9
Polybutylene (hot water supply)	15 – 18	1.0	0.6
	20 – 22	1.4	0.7
Notes:			
The spacing for these pipe materials is based on the pipes being located within the building structure.			



NZBC G12/AS1



NZBC G12/AS

RAINWATER SYSTEMS

Documents referred to in this section are: -

NZBC B1, B2, E1 & E2

AS 1397 Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated

Workers to be either competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, or roofers, familiar with the materials and techniques specified.

Aluminium/zinc alloy coated pre-painted steel

ALUMINIUM/ZINC ALLOY PRE-PAINTED SHEET STEEL

0.55 mm sheet steel coated to AS 1397, pre-painted.

ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING

Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.

DOWNPIPES

Complete with stand-off brackets and galvanised or stainless screws.

FLASHINGS GENERALLY

0.55 mm sheet steel galvanised to AS 1397, aluminium/zinc coated to AS 1397, 1.8 mm (20 kg/m²) copperised pure lead, 0.5 mm half hard copper sheet, or proprietary rubberised perforated aluminium strip, all to location, compatibility and design requirements of BRANZ Bulletin 304 Flashing design.

Aluminium/zinc alloy coated pre-painted steel

ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL FASCIA

Shape/size: Refer to construction schedule

Brand/type: Coloursteel

Paint coating type: Endura/Max

ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING

Shape/size: Multiline Quad (Cross Sectional Area – Refer to construction schedule)

Brand/type: Coloursteel

Paint coating type: Endura/Max

80mm PVC DOWNPIPES

SANITARY PLUMBING

Documents referred to in this section are:

NZBC G1/AS1 Personal hygiene

NZBC G13/AS1 Foul water - sanitary plumbing

NZBC H1/AS1 Energy Efficiency – hot water systems

AS/NZS 1260 PVC pipes and fittings for drain, waste and vent applications

AS/NZS 1260 PVC-U pipes and fittings for drain, waste and vent application

Plumbers, Gasfitters and Drainlayers Act 2006

QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 2006.

UPVC WASTE, SOIL AND VENT PIPES

UPVC pipe to AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings.

White polybutylene or PVC, including all associated fittings.

SEALANT, SANITARY FIXTURES

For between sanitary fixtures and accessories and adjacent floor or wall surfaces.

1-part, silicone, containing mildew resistant agents.

Colour: White

EXECUTION GENERALLY

Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

INSTALL SANITARY FIXTURES

Fit and install sanitary fixtures and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.

INSTALL TRAPS, WASTE AND VENT PIPES

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to NZBC G13. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework. Penetrations to the DPM under the slab to be sealed with DPM tape. Wall penetrations as per E2/AS1 Figure 68.

NZBC G13/AS1

Table 7: Distances Between Supports Paragraph 6.2.1			
Material	Pipe diameter (mm)	Maximum distance between supports (m)	
		Vertical pipe	Graded pipe
Copper pipes	32 to 50	3.0	2.5
	greater than 50	3.5	3.0
uPVC pipes	32 to 50	1.0	0.5
	65 to 100	1.2	1.0
	greater than 100	1.8	1.2

DRAINAGE

Documents referred to in this section are:

NZBC B1/AS1	Structure – general
NZBC E1/AS1	Surface water
NZBC G13/AS2	Foul Water
AS/NZS 1254	PVC pipes and fittings for storm and surface water applications
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 4130	Polyethylene pressure pipes (PE)
AS/NZS 4058	Precast concrete pipes (pressure and non-pressure)
NZS 3104	Specification for concrete production
NZS 7643	Installation of unplasticised PVC pipe systems
	Plumbers, Gasfitters and Drainlayers Act 2006

QUALIFICATIONS

Drainlayers to hold a current licence within the terms of the Plumbers Gasfitters & Drainlayers Act 2006 and be experienced, competent and familiar with the materials and techniques specified.

CONCRETE

17.5 MPa ordinary grade to NZS 3104.

uPVC PIPES

uPVC Pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

GULLY TRAPS

To NZBC G13/AS2: 3.3, complete with grating. (NZBC G13 Fig 2)

DRAINAGE AND FILLING MATERIALS

Granular: Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm & **AP40 compacted at 150mm layers** under slab. (use **AP40 compacted at 150mm layers** under slab as drain bedding)

Selected: Fine grain soil or granular material suitable for bedding; excluding topsoil.

Ordinary: Top soil or other excavated materials.

STORMWATER

Dispose of stormwater on site as shown on the drawings.

CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100 mm deep 17.5 MPa concrete bed reinforced with three 10 mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100 mm 17.5 MPa concrete.

BEDDING AND BACKFILL

Backfill drain lines in 150 mm layers, well tamped but without disturbing the drains. Finish off with 150 mm of topsoil, slightly mounded above the finished ground line. As per NZBC G13/AS2 Bedding and backfilling

SUPPORT AND THERMAL MOVEMENT

The plumbing system shall accommodate without failure the expected longitudinal movement in pipes resulting from temperature changes. All copper and PVC-U pipes shall incorporate expansion joints to comply with clause NZBC G13/AS1 6.3.1

TESTING OF DRAINAGE

NZBC G13/AS1 - 7.0 Watertightness

7.1 Test methods

7.1.1 All above ground sanitary plumbing pipework shall be tested by water test or air test to verify that the system is watertight.

7.1.2 Water test: The method described in Section 10 of NZS 7643 may be used for ensuring watertightness of above ground sanitary plumbing pipework.

7.1.3 Air tests may be carried out in accordance with either clause 12.3.2 of AS/NZS 3500.2.2 or Paragraph 8.3 of E1/VM1.

NZBC G13/AS2 - 6.0 Watertightness

6.1 Testing

6.1.1 All sections of the drainage system shall be tested by water test or air test to ensure watertightness.

COMMENT:

Testing should be undertaken before backfilling for the easy identification of any leaks.

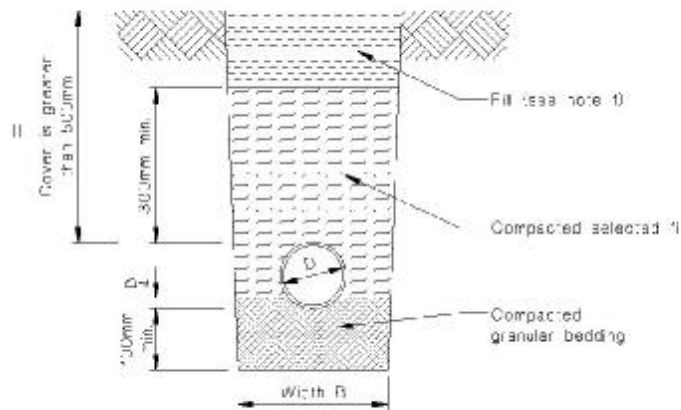
6.1.2 Water test

NZS 7643 Section 11 gives an acceptable method for ensuring watertightness of below ground uPVC drainage pipework.

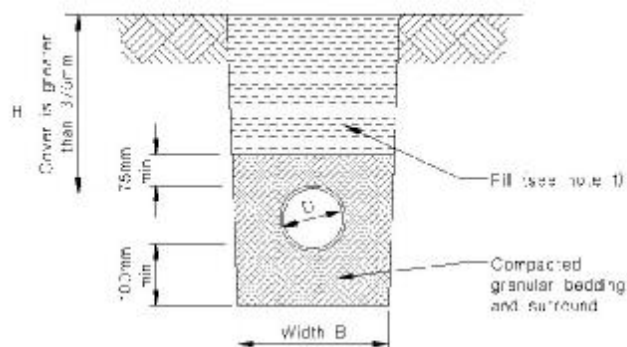
6.1.3 Air tests may be carried out in accordance with either clause 12.3.2 of AS/NZS 3500.2.2 or Paragraph 8.3 of E1/VM1.

NZBC G13/AS2

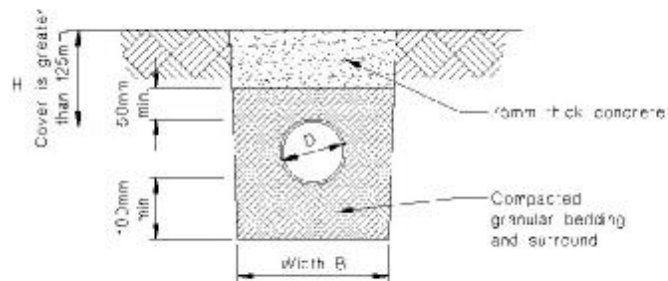
Figure 7: Bedding and backfilling
Paragraphs b.2.7, b.3.1 and b.4.7



(a) Bedding type 'B' of NZS 7843
Cover greater than 600mm



(b) Bedding type 'D' of NZS 7843
Cover greater than 375mm



(c) Cover between 125mm and 375mm

NOTE:

1 Fill shall be:

- Ordinary fill where drains are located below gardens and open country.

- Compacted selected fill where the drains are located below residential or pavements and similar areas subject to light traffic.

ELECTRICAL

Documents referred to in this section are:

NZBC F7/AS1	Warning systems, 3.1 Domestic smoke alarms
NZBC G2	Laundering – Service connections
NZBC G3	Food Preparation and Prevention of Contamination
NZBC G8	Artificial Light - Illuminance
NZBC G9/AS1	Electricity, 1.0 Electrical Installations within domestic dwellings
AS 1670	Part 6: Smoke Alarms
AS/NZS 3000	Wiring Rules
AS/NZS 3008	Electrical installations - Selection of cables
	3008.1.2: Typical New Zealand installation conditions
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
NZIEP 51:2004	New Zealand Electrical Code of Practice for Homeowner/Occupier's Electrical Wiring Work in Domestic Installations

PVC-insulated cables for electric power and lighting
Electricity Regulations
New Zealand electrical codes of practice (ECP)

Illuminance at floor level shall be no less than 20 lux as per NZBC G8.3 - Performance requirement.
Minimum requirement: 1 standard lighting fixture per 10m² minimum. (per room) Hallway requires 1 lighting fixture per 4.7 lineal meters minimum. Lighting areas based on 100w closed abutted (CA80 or CA135) down light, 100w batten holder & 100w ceiling pan. (Where energy efficient bulbs are used they shall have an equivalent wattage to the minimum stated)

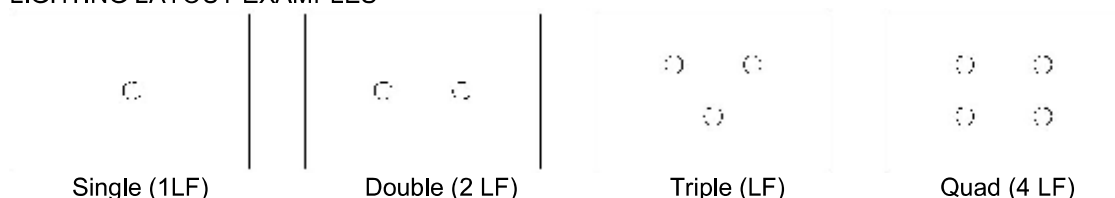
LIGHTING SCHEDULE (Minimum per area/room)

2 LF/room	Living, kitchen, dining, family, activity, media, lounge & bedroom.
1 LF	Hall (1 LF per 4.5 lineal metres min.)
1 LF/bay	Garage
1 LF	Entry, toilet, bathroom, laundry, WIR, store.
1 LF	Other rooms (1 LF per 10m ² min.)

KEY

LF	Standard Lighting Fixture – 100w Down light (CA80 or CA135), 100w Batten holder or 100w Ceiling Pan
H	Halogen – 50w (1 H per 5m ² min. or 1 H per 2.2 lineal metres)

LIGHTING LAYOUT EXAMPLES



Lighting to be spaced out evenly.

Note: The above lighting schedule is the minimum requirement. The final layout is by owner on site but will not be less than the above schedule.

COMPLY

Comply with the referenced Electricity Regulations, Standards and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection.

QUALIFICATIONS

Carry out work by or under the direct supervision of a holder of a practising certificate under the Electricity Regulations.

CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance to the owner, as required by the Electricity Regulations, and in particular, clauses 16, 34 and 35. Allow the network utility operator to test before the meter installation, listed work inspection, polarity check and liveing of supply.

MAINS SUPPLY, SINGLE PHASE

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

MAIN EARTH - Provide a plastic toby box or UPVC tube to contain and protect the earth pin. Fix the connecting earth wiring securely against wall surfaces. Earth Bar to be bonded to the reinforcing mesh.

RCD protection to AS/NZS 3000

Bond together and to earth all plumbing fittings not adequately isolated, to the Electricity Regulations and to the fitting manufacturer's requirements.

CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0 mm², and to AS/NZS 3008.1.2. Minimum sizes. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.

METER BOX

Proprietary manufactured, zinc plated powder coated metal case, weatherproof if mounted outdoors, and complete with meter mounting, main switch and fuse.

DISTRIBUTION BOARD

Proprietary manufactured heavy duty plastic fire resistant enclosed construction, complete with neutral and earth busbars, MCBs, 30 mA RCDs and 60 amp main switch, complete with 20% spare capacity to AS/NZS 3000. All protective devices: 6kA MCBs of the appropriate rating.

MINIATURE CIRCUIT BREAKERS

Miniature moulded case circuit breakers

WALL BOXES

Standard size in plastic, with 2 or more gang size, all screw fixed.

SWITCH UNITS

Sixteen amp minimum rated, 230 volt polycarbonate flush plate units.

Fit all single and double switch units and socket at the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units: 1000 mm & at least 500mm from corners.

Socket Units: 150 mm above work benches,

Mount switches vertically and socket units horizontally. Label all switch units that control electrical equipment by colour filled engraving on the switch plate.

SWITCHED SOCKET UNITS

Ten amp, 230 volt polycarbonate flush plate 3 pin flat NZS combination switch units, single or multi gang.

SMOKE ALARMS

To AS 1670 & Smoke alarms shall be installed on or near the ceiling in accordance with AS 1670.6 and the manufacturer's instructions.

LAUNDRY

No less than 1x 10amp socket outlet to be provided adjacent to space provided for washing machine.

KITCHEN

No less than 1x 10amp socket outlet to be provided in space behind Refrigerator.

Provide 1x fixed outlet to cooking appliance

GARAGE DOOR CONTROLLERS

Provide single switched socket outlet for the door controller to plug into.

LIGHT FITTINGS

All fittings complete with lamps, install light fittings in locations as directed by the owner, and in accordance with the fitting manufacturer's requirements and no less than the lighting schedule.

All downlights to be closed and abutted, halogen downlights to have factory heat shields.

CIRCUIT PROTECTION

Install MCBs to protect each final sub circuit sized for circuit maximum loading.

Domestic

Install RCD protection at the switchboard of final sub circuits controlling socket outlets and lighting except for:

- Fixed cooking equipment, heating, HWC and A/C units

SET-OUT

Unless specifically detailed, confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring with the owner. Fix outlet items level, plumb and in line.

CABLING

Install with a maximum of 17 light outlet units or 6 double or single switched socket units on any circuit. Minimum 2 lighting circuits per installation. Separate circuits for all electric heating appliances. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground.

Complete all labelling in clear machine printed permanent manner. Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

WALL BOXES

Flush mounted in cavity construction.

EXTRA LOW VOLTAGE LIGHTING

Where remote transformers are used for ELV lamps, connect from transformer to lamp with minimum 2.5 mm² conductor, to ensure voltage drop in transformer and conductor does not exceed 0.8 volts. Connect lamps 50 watt or greater matched to no more than one per transformer, located as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation.

COMPLETION

Leave work operating correctly, with equipment clean and all lamps operational.

Management of Site Safety

The main contractor to undertake best practice systems to manage health and site safety.

Building supervisors are all site safe qualified. The contractors are inducted on our Health and Safety policy and also provide the main contractor with documentation on their Health and Safety Management systems and also fill out a health and safety questionnaire.

The main contractor (Noted on specifications cover sheet) undertakes to manage hazards by elimination, isolation or minimisation in that order.

There is a Hazard Register posted on site at all times and all sub trades and suppliers required to record any potential hazards introduced onto site.

Earthworks and trenching will generally be back filled on same day but if this is not possible, barriers will be erected to minimise hazard.

To ensure site is clear, work areas are to be kept clean and tidy with receptacles provided and areas allocated areas for waste and refuse.

Chemicals and paints will be stored in original containers in a secure and well ventilated place appropriate to the product.

Building materials stored on site will be stacked so they cannot fall or protrude dangerously.

Public visiting site are instructed to report to site foreman who will ensure public are provided with a high visibility vest which must be worn on site at all times. Site foreman to ensure public are detoured from hazardous areas.

Fencing to keep out unauthorised personnel. Under NZBC F5 – Construction and Demolition Hazards Clause 1.1.1, a 2.0 metre fence is required for protection of public.

Non-work Periods

The main contractor and sub contractors have responsibility to ensure public is not endangered in any way and site is safe during non-work periods

4323M METALCRAFT ROOFING STEEL TILE ROOFING

1. GENERAL

This section relates to **Metalcraft Roofing** interlocking pressed metal roofing tiles complete with underlay, battens and accessories.

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
EPDM	Ethylene Propylene Diene Monomer
NZMRM	New Zealand Metal Roofing Manufacturers Inc.

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
AS/NZS 1170	Structural design actions, Part 2: Wind actions
NZS 3604	Timber-framed buildings
NZS 4217	Pressed metal tile roofs
NZMRM CoP	NZ metal roof and wall cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Are available on the website or by contacting Metalcraft Roofing.

For technical assistance contact **Metalcraft Roofing**
Web: www.metalcraftroofing.co.nz

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against:

15 years (5+10)	Failure of coating adhesion (paint or chip): manufacturer's standard warranty consisting of 5 years full coating warranty, plus additional 10 years diminishing pro-rata warranty.
50 years (25+25)	Weatherproofing failure by material penetration as a result of corrosion: manufacturer's standard warranty consisting of 25 years full weatherproofing warranty, plus additional 25 years diminishing pro-rata warranty.
5 years	Weatherproofing failure caused by substandard workmanship:
From:	Date of completion of installation

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

- 1.7 **QUALIFICATIONS**
Installers to be experienced competent tile fixers, familiar with the **Metalcraft Roofing** materials and the techniques specified.
- 1.8 **MAINTENANCE INSTRUCTIONS**
Provide one copy of all relevant **Metalcraft Roofing** maintenance information on completion of the roofing work.
- Performance**
- 1.9 **FIXINGS, WIND**
Design and use the fixings appropriate to the manufacturers requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT. To [NZS 3604](#), table 10.12 **Tile battens for all wind zones**.
- 1.10 **CO-ORDINATE**
Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof.
- 1.11 **PERFORMANCE**
Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.
- 2. PRODUCTS**
- Materials**
- 2.1 **UNDERLAY**
Refer to 4161 UNDERLAYS, FOIL AND DPC for underlays.
- 2.2 **BATTENS**
To [NZS 3604](#), 10.2.1.16 **Purlins and tile battens**, Radiata pine or Douglas fir SG6, treated H1.2. Moisture content to [NZS 3602](#), size, spacing and fixing to [NZS 3604](#), table 10.12, **Tile battens for all wind zones**.
- 2.3 **PRESSED METAL TILES**
Metalcraft Roofing pressed metal tiles to [NZS 4217](#), and [NZBC E2/AS1](#), 8.3 **Pressed metal tiles**. Refer to SELECTIONS for type.
- Components**
- 2.4 **NAILS**
Hot-dipped galvanized steel black coated flat head 50mm x 2.8mm nails.
- 2.5 **RIVETS**
Sealed aluminium, minimum diameter 4.8mm.
- 2.6 **FLASHINGS, CAPPINGS AND COVERS**
To [NZBC E2/AS1](#), 4.0 **Flashings**. Use ridge and hip caps, barge covers, purpose made flashings and side flashings supplied by **Metalcraft Roofing** as part of the selected tile roofing system.
- 2.7 **SEALANT**
Neutral curing silicone or polymer sealant as required by **Metalcraft Roofing** and used as directed.
- 3. EXECUTION**
- Conditions**

- 3.1 **INSPECTION**
Inspect the roof framing and supporting structure and do not start work until it is complete and fully braced ready for tiling, all to the requirements of [NZS 3604](#). No tiles should be laid on roof pitches below 12 degrees (1:5).
- 3.2 **STORAGE**
Stack tiles on a level, hard base, ventilated and protected from damage and weather. Do not allow moisture to build up between sheets in a stack.
- 3.3 **HANDLING**
Unload and handle tiles without soiling, scratching, crushing or other damage. Protect edges from damage.
- 3.4 **COMPLY**
Comply with the preparation, laying and fixing requirements of [NZBC E2/AS1](#), [NZS 4217](#), or **Metalcraft Roofing** requirements where these are of a higher standard.
- Application**
- 3.5 **SET-OUT**
Carefully set out the roof with a measuring rod to position the battens accurately taking account of rafter lengths, overhangs into gutters and spoutings and verge overhangs, all to minimise tile cutting.
- 3.6 **FIX UNDERLAY**
Refer to 4161 UNDERLAYS, FOIL AND DPC for the installation of underlays.
- 3.7 **FIX BATTENS**
To [NZS 3604](#). Fix battens over the underlays in straight courses, spanning at least 3 rafters, between fascia and ridge and elsewhere to **Metalcraft Roofing** details. Nail at every crossing to [NZS 3604](#), table 10.12. Square cut ends to form butt joint over rafters with joints staggered.
- 3.8 **LAY VALLEYS**
Lay valleys over valley boards in accordance with **Metalcraft Roofing** recommendations.
- 3.9 **LAYING**
Do not take heavy equipment onto the roof. Plan work to minimise foot traffic. Work on the roof only using clean soft soled shoes as appropriate footwear. Interlock, lap and lay in a brick laying pattern to **Metalcraft Roofing** requirements, also finish to ridge, hip, valley, barge and eaves to [NZBC E2/AS1 8.0 Roof Claddings](#), 8.3 **Pressed Metal Tiles**, and **Metalcraft Roofing** required details, if not detailed elsewhere.
- 3.10 **NAILING**
Nail tiles to battens generally through the upstand and downturn of the tile lap as well as all elements to the manufacturer's details using 50mm x 2.8mm hot-dipped galvanized steel black coated flat head nails, 4 per tile, to [NZBC E2/AS1](#). Bottom tile row only, use a 50mm x 2.8mm nail with EPDM/Butyl washer seal.
- 3.11 **CUTTING AND BENDING**
Cut, bend and straighten tiles neatly to finish true to line and plane when in place, using installation equipment maintained in the proper condition, all to [NZS 4217](#) and as required by **Metalcraft Roofing**. A full 40mm high stop end should be made at any tile termination point.
- 3.12 **FIT FLASHINGS, COVERS AND CAPPINGS**
Cut, fit and fix all elements true to line and plane, to [NZBC E2/AS1: 4.0 Flashings](#), [NZBC E2/AS1: 5.0 Roof/wall junctions](#), and to **Metalcraft Roofing** details and the [NZMRM CoP](#) NZ metal roof and wall cladding Code of Practice, section 10, if not detailed elsewhere.

- 3.13 **PENETRATIONS**
Form to [NZBC E2/AS1](#) and [NZS 4217](#), with upstands ready for flashings/overflashings.
Flash and overflash all penetrations through the roof.
- 3.14 **PENETRATIONS AND JUNCTIONS**
Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:
- underlay turned up at wall and parapet lines
 - underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
 - roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
 - installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).
- Completion**
- 3.15 **MAKE GOOD**
Touch-up all nail heads with touch up paint.
- 3.16 **LEAVE**
Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.
- 3.17 **REMOVE**
Remove trade rubbish swarf and unused materials from the roof and surrounds regularly during the work. Sweep down the roof at the end of each day. Clean out spoutings, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

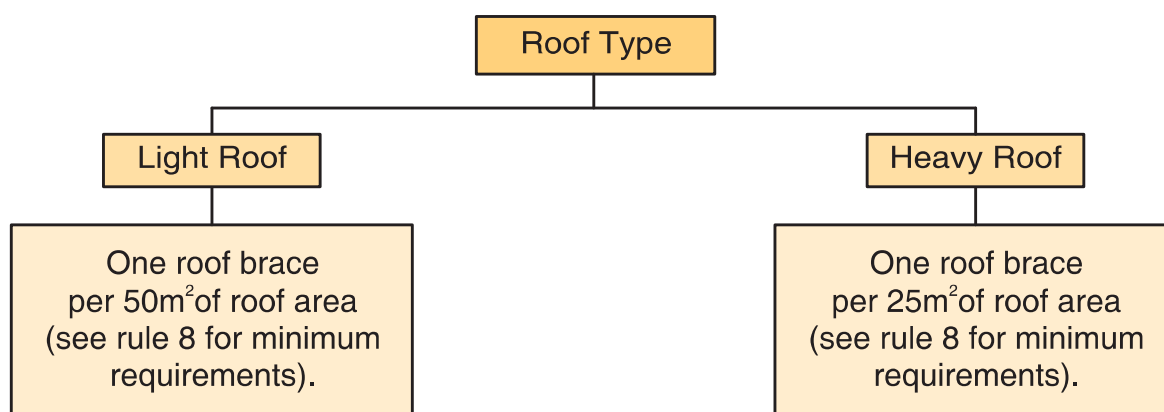


LUMBERLOK

ROOF BRACING SPECIFICATION AS PER NZS 3604:2011

- ★ Covers roof bracing requirements to resist horizontal loads as set out in NZS 3604:2011 Section 10.
- ★ A definitive guide to the description and installation of Roof Plane Braces and Roof Space Braces.

Roof Bracing Requirements



Roof Bracing - Rules & Definitions

1. The bracing described in this brochure covers both framed roofs and fully trussed roofs.
2. Roof planes less than 6m² (e.g. dormers & porches) do not require bracing.
3. Roof braces can consist of either i) Roof Plane Brace or ii) Roof Space Brace or combination of the two.
4. Roof braces are not required on roofs where sarking is installed as per NZS 3604:2011 Clause 10.4.4 or where a ceiling diaphragm is installed and is attached to the rafters.
5. Roof area is the actual plan area of the roof and includes overhangs.
6. A hip or valley rafter running continuously from ridge to top plate can be classed as one roof plane brace.
7. A pair of crossed LUMBERLOK Strip Brace (preferred for ease of installation) can be classed as one roof plane brace and shall be installed as detailed in this brochure.
8. There must be at least one roof plane brace in each roof plane. Each ridge line shall have a minimum of two roof braces.
9. Every design effort should be made to distribute the roof braces as evenly as possible over the entire roof area and run alternately in opposite directions.

Roof Bracing Options



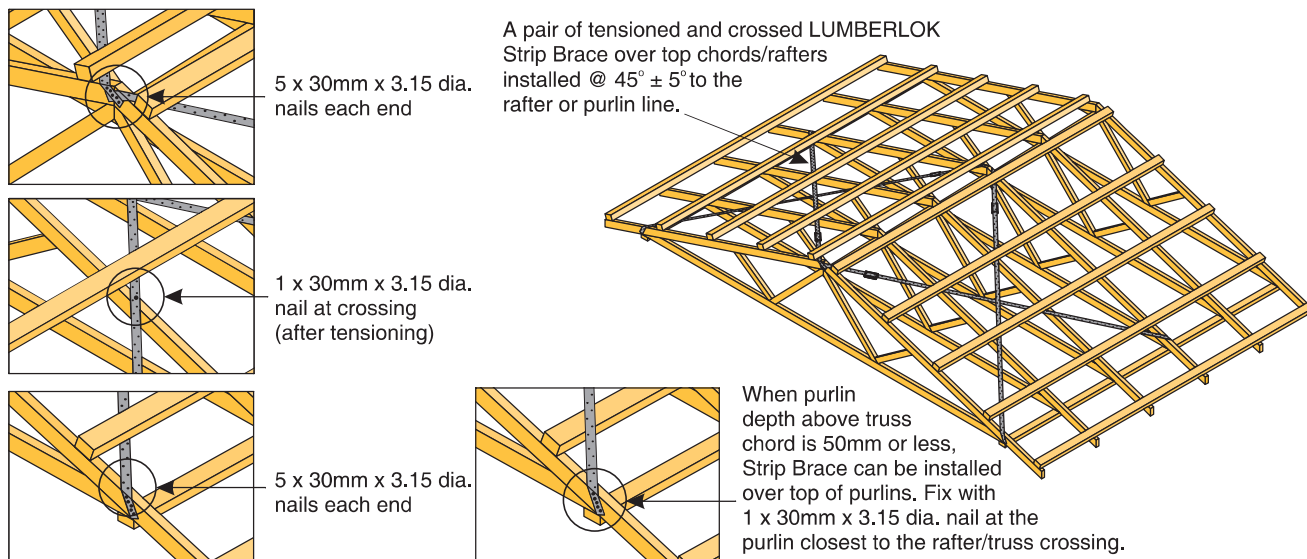
i) ROOF PLANE BRACE

Each roof plane brace can be:

- A hip or valley rafter running continuously from ridge to the top plate in accordance with NZS 3604:2011 Clauses 10.2.1.3.2 or 10.2.1.3.3

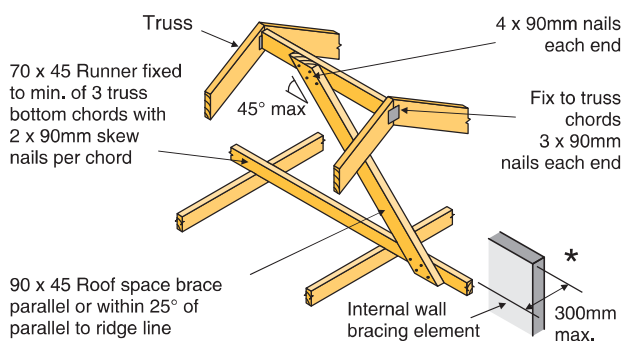
OR

- A pair of tensioned and crossed LUMBERLOK Strip Brace running continuously from ridge to top plate installed as detailed below.

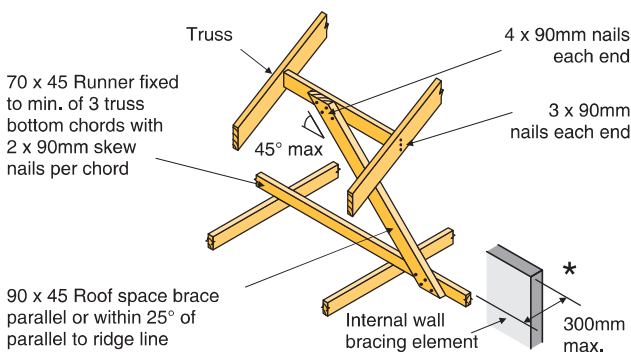


ii) ROOF SPACE BRACE

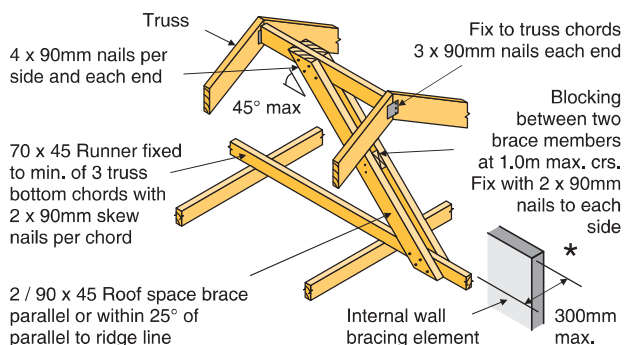
(A) Less than 2m long.



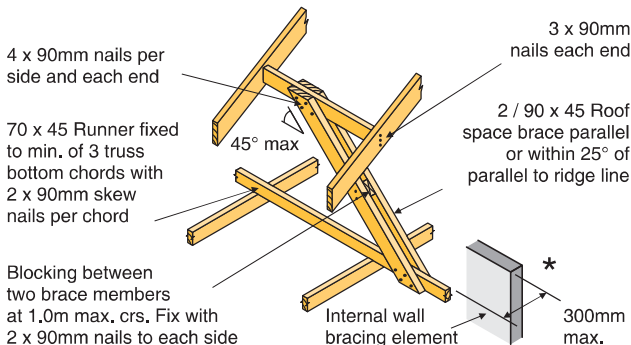
(C) Not directly under the ridge - less than 2m long.



(B) More than 2m long (Max. 4.8m).



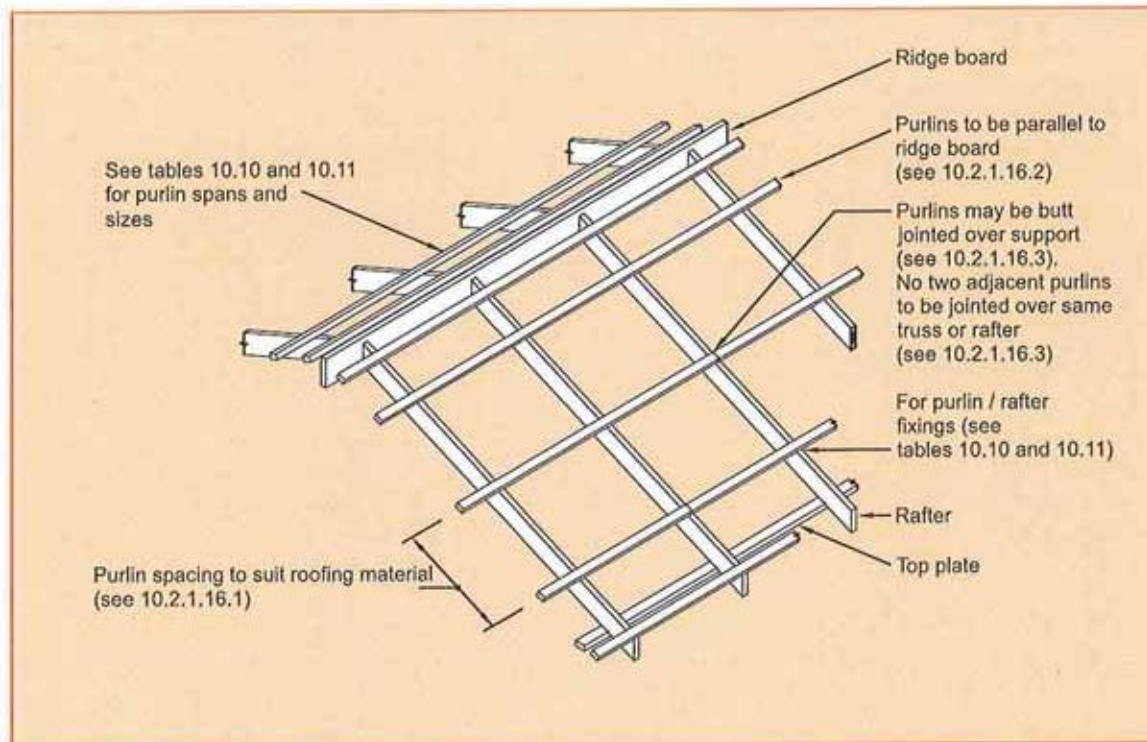
(D) Not directly under the ridge - more than 2m long.



* Not required when a ceiling diaphragm complying with Clause 13.5 of NZS 3604:2011 is used.

SECTION 10 – ROOF FRAMING

NZS 3604:2011



SECTION 10 – ROOF FRAMING

NZS 3604:2011

Table 10.12 – Tile battens for all wind zones (see 10.2.1.16.7)

Tile batten size	Max. span	Maximum spacing and fixing in the following wind zones									
		Low		Medium		High		Very high		Extra high	
		Spacing	Fixing	Spacing	Fixing	Spacing	Fixing	Spacing	Fixing	Spacing	Fixing
(mm)		(mm)		(mm)		(mm)		(mm)		(mm)	
Light roof cladding											
50 x 40	900	370	R	370	R	370	S	370	S	370	T
50 x 50	1200	370	R	370	S	370	T	370	T	370	T
Heavy roof cladding											
50 x 25	480	370	R	370	R	370	R	370	R	370	R
50 x 40	600	370	R	370	R	370	R	370	R	370	R
50 x 50	900	370	R	370	R	370	R	370	R	370	R
Fixing type		Description							Alternative fixing capacity (kN)		
R		1 / 90 x 3.15 gun nail							0.55		
S		2 / 90 x 3.15 gun nails							0.8		
T		1 / 10g self-drilling screw, 80 mm long							2.4		

10.2.1.17 Dummy rafters**10.2.1.17.1**

Dummy rafters may be laid over sheet *sarking* or ceiling *lining* material which is a maximum of 20 mm thick (see figure 10.20).

10.2.1.17.2

Purlin to dummy rafter and dummy rafter to rafter fixings shall be as given by table 10.13 and figures 10.19 and 10.20.



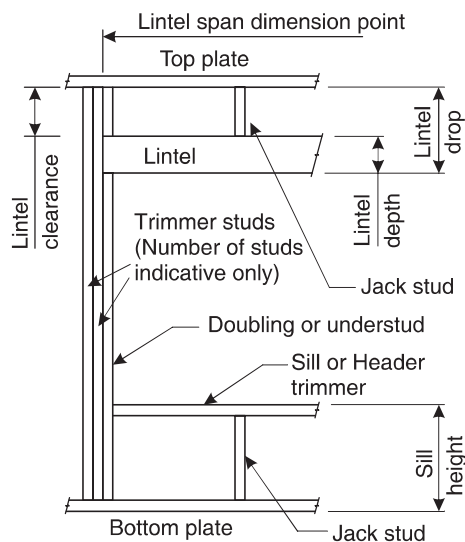
LUMBERLOK

LINTEL FIXING SCHEDULE ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

DEFINITIONS



Lintel Supporting Girder Trusses:

Roof Tributary Area	Light Roof				Heavy Roof			
	Wind Zone				Wind Zone			
	L, M, H	VH	EH		L, M, H	VH	EH	
8.6 m ²	G	G	H		G	G	H	
11.6 m ²	G	H	H		G	G	H	
12.1 m ²	G	H	H		G	H	H	
15.3 m ²	H	H	-		G	H	H	
19.1 m ²	H	-	-		G	H	-	
20.9 m ²	H	-	-		H	H	-	
21.8 m ²	H	-	-		H	-	-	
34.3 m ²	-	-	-		H	-	-	

Notes:

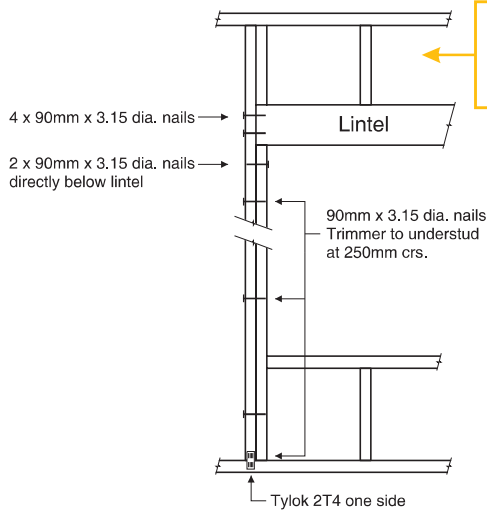
- 1) Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
- 2) Assumed girder truss is at mid-span or middle third span of lintel
- 3) Use similar fixings for both ends of lintel
- 4) All other cases require specific engineering design

SELECTION CHART FOR LINTEL FIXING

Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof					Heavy Roof				
		Wind Zone					Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
0.7	2.0	E	E	E	E	F	E	E	E	E	E
	3.0	E	E	E	F	F	E	E	E	E	F
	4.0	E	E	F	F	F	E	E	E	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-

LINTEL FIXING OPTIONS

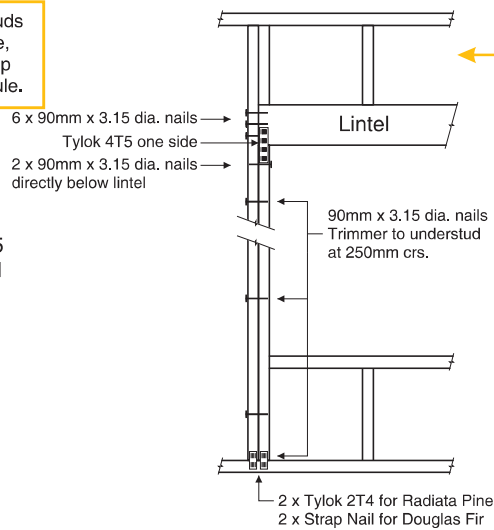
TYPE E 1.4 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

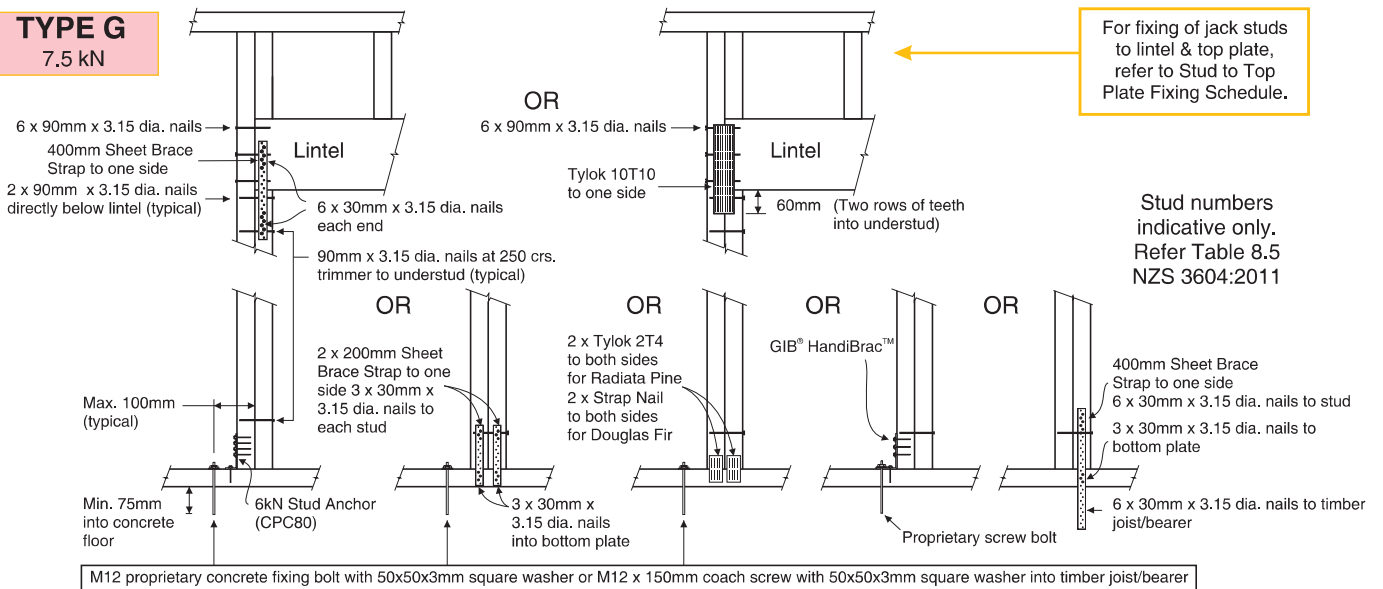
TYPE F 4.0 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

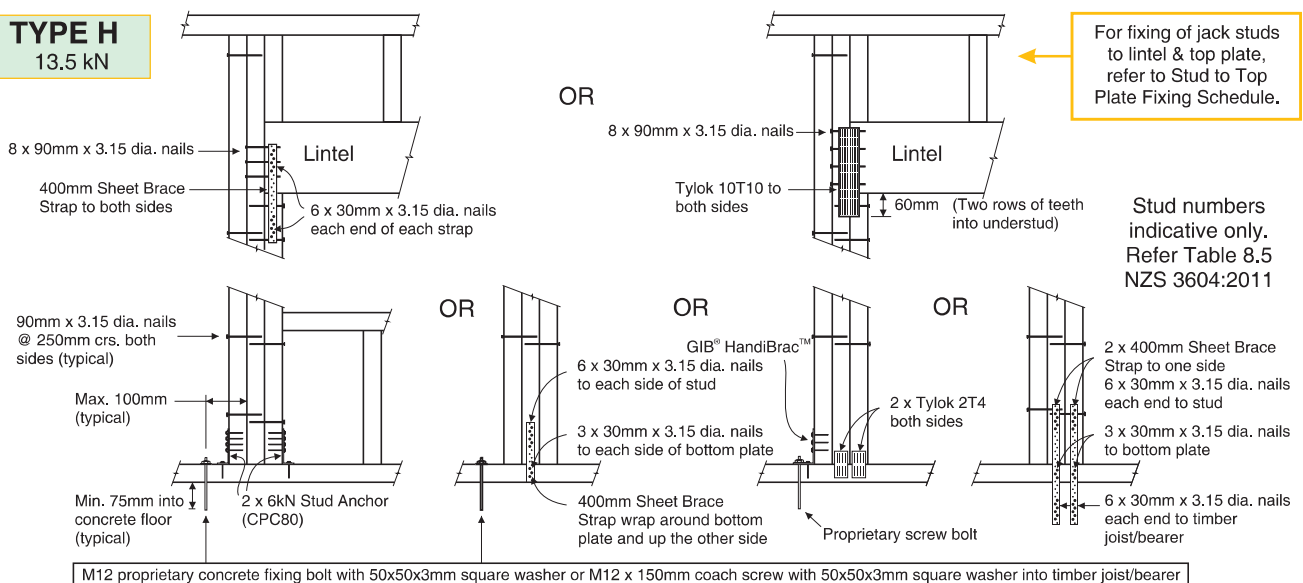
TYPE G 7.5 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

TYPE H 13.5 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

Graphex Insulated Facade System - Graphex 60mm Panel on 20mm Cavity

General

Properties

Graphex Panels have the following material properties:

- Thermal Conductivity: 0.32 W/(mk)
- Thermal Resistivity, R0.69 @40mm, R0.86 @50mm, R1.03 @60mm (The thermal calculations shown are de-rated in accordance with NZS4214)
- Substrate Thickness: 40/50/60mm GRAPHEX Insulation panel
- Total thickness: 45/55/65mm (min/average) coatings and substrate (excluding cavity)
- Weight: approx 7kg/m² coatings and substrate, considered a light weight cladding in terms of NZS3604
- Windzone: All wind zones of 3604

Building Code Compliance

If the project has a building consent then the following clauses apply.

Durability

The work covered by this part of the specification has been designed and constructed to meet the durability performance requirements of NZBC B2.

On Going Maintenance Instructions

Provide ongoing maintenance instructions required to meet the performance requirements of the NZBC.

Substrate

All the appropriate inspections are to be carried out by a BCA representative and that it complies with the NZBC requirements.

Documents

Abbreviations

The following abbreviations are used throughout this work section:

Documents to also refer to where applicable

- NZBC B1 Structure
- NZBC B2 Durability
- NZBC E2 External Moisture
- NZBC F2 Hazardous Building Materials
- AS/NZS 1170.2 Structural design actions - Wind actions
- NZS 3602 Timber and wood-based products for use in building
- NZS 3603 Timber structures standard
- NZS 3604 Timber framed buildings
- BRANZ Bulletin 353 Ground clearances
- BRANZ Bulletin 418 Weathertightness do's and don'ts
- BRANZ Bulletin 439 Condensation risk in walls

Manufacturers Documents

- Resene Construction Systems Technical Resources
- Resene Construction Systems TradeSpec
- Resene Construction Systems Project Guide
- Resene: Total Colour System

Copies of the above relevant company documents referred to in this specification are available at;

Resene Construction Systems
Web: reseneconstruction.co.nz
Telephone: 0800 50 70 40

Resene Paints
Web: resene.co.nz
Telephone: 0800 RESENE (0800 737 363)

No Substitutions

Substitutions are not permitted to any specified Resene Construction Systems system. Materials and execution to Resene Construction Systems specification except where varied by this specification and supported by architectural detailing.

Qualifications

Use only LBP registered plasterers licensed to apply the Resene Construction Systems exterior render systems.

Documentation

Finish Sample

Submit one 300 mm x 300 mm sample of the selected texture finish and colour for approval on request by the main contractor or specifier. Obtain signature of acceptance on sample and return to the Registered Plasterer.

Maintenance Instructions

Provide Resene Construction Systems Maintenance Guide on or before practical completion of the contract for issuing to the building owner. Resene Construction Systems Maintenance Guide to be provided on request.

Producer Statement

If the project has a building consent then a producer statement shall be supplied by the plasterer in the form as required by the BCA.

Health and Safety

Refer to the requirements of the Health and Safety in Employment Act 2015 and Worksafe NZ: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards and risks is not possible then minimise hazards and risks in this work on site by using the proper equipment and techniques as required in the MPNZA Painters hazard handbook. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put into place procedures for dealing with emergencies. Obtain from Resene Construction Systems the Material Safety Data Sheets for each product. Keep sheets on site and comply with the required safety procedures. Confirmation at the start of the project as to whether a Site Specific Safety Plan is to be produced by the Registered Plasterer prior to works starting.

Warranty

Warrant this system under normal environmental and use conditions against failure. Resene Construction Systems system warranty.

Materials: by Resene Construction Systems - 15 Years Materials only

Execution: by Registered Plasterer - 5 Years Workmanship only

OnSite Assistance

Allow to inspect the whole of the work at each stage. Determine a programme for onsite assistance including notification when each part and stage of the work is ready for inspection prior to the work commencing. Permit representatives of Resene Construction Systems to inspect the work in progress and to take samples of their products from site if requested.

Components

RCS 20mm Graphex Battens

- 40mm x 20mm H-Grade Graphex Peel and Stick Batten
- Supplied in Boxes
- 228 units in a box
- AS 1366 Part 3 Class H (with fire retardant).

Graphex 60mm

- 2400 x 1200
- 60mm Thick
- Allow for 10% Wastage when Installing
- AS 1366 Part 3 Class H (with fire retardant).

Nails (Preloaded) 110mm

- Flat-head, hot-dipped galvanised and 40 mm diameter nylon washers.
- 110mm x 3.55

RCS Drip Edge (Window Heads)

- Supplied in 2400mm Lengths
- Used with both the EdgeSeal Head Flashing and also the Universal Starter Strip

RCS EdgeSeal Head Flashing

- Supplied in 2.4m Lengths
- Generally requires the Drip Edge Flashing

RCS EdgeSeal Window Flashing

- Used for sill and jamb installations
- Supplied in 2400mm lengths

RCS Pre-meshed Corners

- Supplied in 2400mm Lengths

RCS Starter Strip (60mm Clip-On)

- Supplied in 2400mm Lengths
- Suitable for 60mm Substrates
- Allows for a 20mm Cavity

Rockcote PM100 Quick Render Base Coat

- Polymer-modified cement-based dry plaster mix. Supplied in 20 kg bags

[- View Technical Data Sheet](#) - [View Safety Data Sheet](#)

RCS RMaxx - Base Coat

RCS RMaxx - is a high-yielding, cement-free dispersion based basecoat mortar. Thanks to its high elasticity, it prevents the formation of cracks and is thus also ideal for use as renovation filler.

[- View Technical Data Sheet](#)

RCS Blue Mesh (1200mm wide)

- Alkali Resistant 6mm x 5mm Weave mesh supplied in 50m rolls

[- View Technical Data Sheet](#)

RCS RMaxx - Level Coat

RCS RMaxx - is a high-yielding, cement-free dispersion based basecoat mortar. Thanks to its high elasticity, it prevents the formation of cracks and is thus also ideal for use as renovation filler.

[- View Technical Data Sheet](#)

Bostik MS Sealant (Tubes)

- 550gm Cartridges

[- View Technical Data Sheet](#) - [View Safety Data Sheet](#)

Rockcote Classico

- 100% acrylic, high-build texture coating. Supplied in 15 Litre pails

[- View Technical Data Sheet](#) - [View Safety Data Sheet](#)

Resene X200 (2 Coats)

- Acrylic reinforced waterproof membrane. Supplied in 4 and 10 litre pails. Tinted to the selected colour

[- View Technical Data Sheet](#) - [View Safety Data Sheet](#)

Installation

The following Resene Construction Systems TradeSpec® Documents can be found at <http://tradespec.co.nz>

All Technical Data Sheets are available at <https://reseneconstruction.co.nz/tds>

All Safety Data Sheets are available at <https://reseneconstruction.co.nz/sds>

- [Building Underlays and Flashing Tapes - Timber Frame - Refer to RCS TradeSpec™ document 1.1](#)
- [Design Information - Refer to RCS TradeSpec™ document 1.2](#)
- [Checking Joinery - Refer to RCS TradeSpec™ document 1.3](#)
- [Light and Heavyweight Fixings - Refer to RCS TradeSpec™ document 1.9](#)
- [Check Timber or Steel Framing - Refer to RCS TradeSpec™ document 2.1](#)
- [Cavity and Batten Installation - Refer to RCS TradeSpec™ document 2.2](#)
- [Fastening EPS / XPS / Graphex board - to timber / steel frame - Refer to RCS TradeSpec™ document 2.3](#)
- [Resene Construction Systems Flashings - Refer to RCS TradeSpec™ document 4.1](#)
- [Check and Prepare EPS / Graphex - Refer to RCS TradeSpec™ document 2.9](#)
- Rockcote PM100 Quick Render Base Coat
- RCS RMaxx - Base Coat
- RCS Mesh (Standard Weave)
- RCS RMaxx - Level Coat
- Rockcote Classico Texture Finish
- Resene X200 Paint Finish (2 Coats)
- [Light Reflectance Values \(LRV\) - Refer to RCS TradeSpec™ document 1.6](#)
- [Maintenance - Refer to RCS TradeSpec™ document 1.7](#)
- [Cleaning Up - Refer to RCS TradeSpec™ document 5.10](#)

Important:

This specification must be read in conjunction with the Resene Construction Systems technical drawings.

No alteration to the Resene Construction Systems RenderSpec® is permitted.

This Resene Construction Systems RenderSpec® must be read in conjunction with Resene Construction Systems TradeSpec® available at <http://tradespec.co.nz>

All Technical Data Sheets are available at <https://reseneconstruction.co.nz/tds>

All Safety Data Sheets are available at <https://reseneconstruction.co.nz/sds>

Timber framing

General framing requirements such as grade, spacings and installation shall comply with the provisions of NZS 3604:2011. To achieve the published bracing performance the minimum actual framing dimensions are 90 x 45mm for external walls and 70 x 45mm for internal walls.

As a minimum the use of Kiln Dried Stress Graded timber for all wall, roof and mid-floor framing members is recommended.

GIBFix® Framing System (alternative layout)

Practices recommended as part of the GIBFix® Framing System aim to increase timber framing efficiencies, reduce reliance on unnecessary framing at wall junctions and minimise surface imperfections that commonly arise from constructing plasterboard junctions over multiple timber members. GIBFix® Angles fixed to a single timber framing member are introduced to tie together plasterboard junctions, improving seismic resilience and decrease the risk of future defects due to timber movement. The GIBFix® Framing System can be used in conjunction with the GIB EzyBrace® System.

Note: GIBFix® Angles and 32mm x 7g GIB® Grabber® Dual Thread Screws may also be used in traditional wall framing layouts and in GIB EzyBrace® Systems.

When the GIBFix® Framing System is used a minimum of 2 equally spaced nogs for walls between 2.4m and 3m in height are required at corners and wall junctions.

When used in GIB EzyBrace® systems GIBFix® Angles must run from top to bottom on all applicable studs. If 2 GIBFix® Angles are required on a stud they must be overlapped by a minimum of 300mm with 2/32mm 7g GIB® Grabber® Dual Thread Screws penetrating through both GIBFix® Angles.

For full specification details refer to GIBFix® Framing System literature available at gib.co.nz/gibfix.

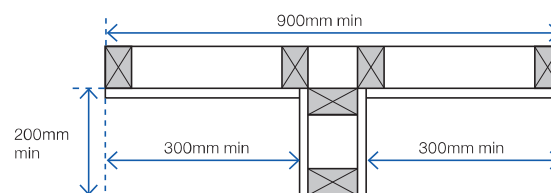
Guidelines for intersection walls

GIB® Bracing Elements may have intersecting walls with a minimum length of 200mm. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions shall be fixed and jointed as specified for intermediate sheet joints. The bracing element length must be no less than 900mm.

Where a Wall Bracing Element is interrupted by a T-junction the element is deemed to be continuous for the whole length (900mm minimum in the example illustrated).

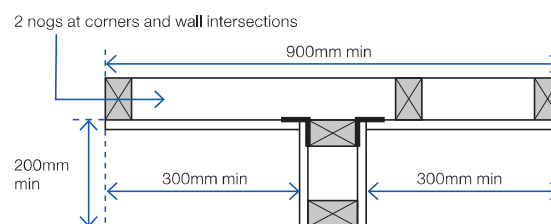
When fixing part sheets of GIB® plasterboard to the side of a T-junction, a minimum width of 300mm applies for bracing elements. See figures 12 and 13.

FIGURE 12: WALL INTERSECTION (TRADITIONAL WALL FRAMING)



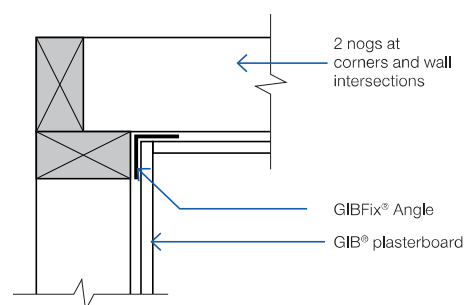
GEB002

FIGURE 13: WALL INTERSECTION (GIBFix® FRAMING SYSTEM)



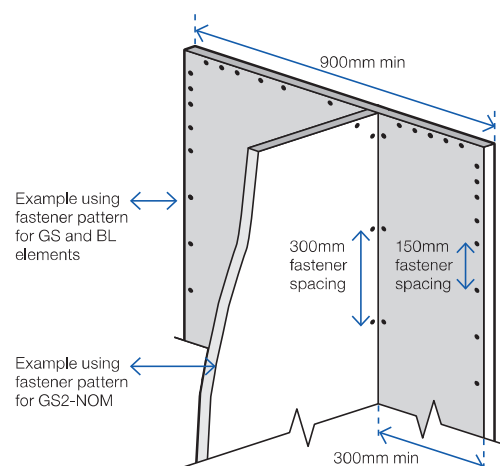
GEB003

FIGURE 14: CORNER INTERSECTION (GIBFix® FRAMING SYSTEM)



GFS001

FIGURE 15: WALL INTERSECTION FASTENER PLACEMENT



Junction

Min 32mm x 6g GIB® Grabber® High Thread or 32mm x 7g GIB® Grabber® Dual Thread Screws @ 300mm ctrs each side.

Top plate connections

For top plate connections refer to NZS3604:2011 section 8.7.3.

Parapets and gable end walls

Bracing elements must be fixed from top plate to bottom plate. Fixing to a row of nogs is not acceptable unless either:

A continuous member such as an ex 90 x 45mm ribbon plate is fixed across the studs just above a row of nogs at the ceiling line, as shown in figure 16.

or

GIBFix® Angle as shown in figure 17. The angle is fixed to a row of nogs with 30 x 2.5mm galv flat head nails or 32mm x 7g GIB® Grabber® Dual Thread Screws at 300mm centres.

Bottom plate fixing

TIMBER FLOOR

For elements with an 'N' specification use 2/100 x 3.75mm hand or 3/90 x 3.15mm power-driven nails at 600mm centres.

In addition, for elements with an 'H' specification, use GIB HandiBrac® panel hold-down fixings at each end of the bracing element, see p.16.

CONCRETE FLOOR – EXTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix external wall plates in accordance with NZS 3604:2011.

Use GIB HandiBrac® panel hold-down fixings at each end of bracing elements with an 'H' specification and minimum intermediate fixings as required by NZS 3604:2011.

CONCRETE FLOOR – INTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix plates in accordance with NZS 3604:2011 or use 75 x 3.8mm shot-fired fasteners with 16mm discs spaced at 150 and 300mm from end-studs and 600mm centres thereafter.

For bracing elements with an 'H' specification use GIB HandiBrac® panel hold-down fixings at each end of the element and minimum intermediate fixings as required by NZS 3604:2011.

FIGURE 16: PARAPETS AND GABLE ENDS WITH RIBBON PLATE

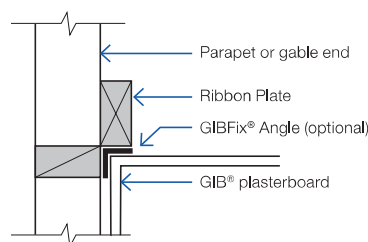
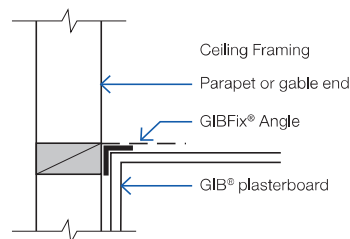


FIGURE 17: PARAPETS AND GABLE ENDS WITH GIBFIX® ANGLE



GFS003

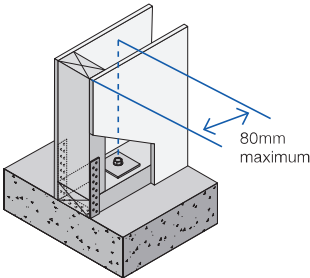
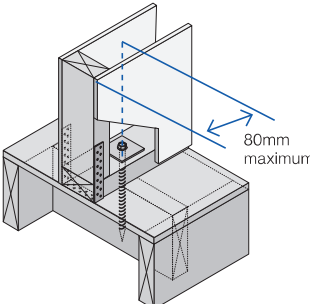
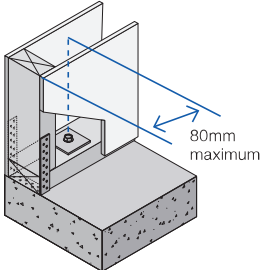
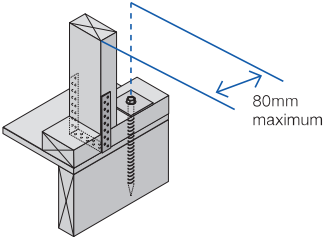
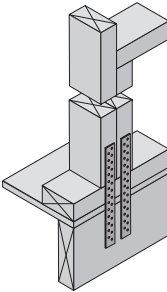
BOTTOM PLATE FIXINGS FOR GIB® BRACING ELEMENTS

Brace type	Concrete slabs		Timber floors
	External wall	Internal wall	External and Internal walls
GS1-N	As per NZS 3604:2011. No specific additional fastening required.	As per NZS 3604:2011. Alternatively use 75 x 3.8mm shot-fired fasteners with 16mm discs, 150mm and 300mm from each end of the bracing element and at 600mm thereafter.	Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.
GS2-N	Not applicable.		
GS2-NOM			
GSP-H BL1-H BLP-H	Intermediate fastenings to comply with NZS 3604:2011 In addition: GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.		Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011. In addition: GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.
BLG-H	Not applicable	As for GSP-H, BL1-H, BLP-H on concrete slab as illustrated on p.15 and 16.	

Bracing strap installation

Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard and

positioned in such a way that the corner fastenings of the bracing element are not affected by it. Keeping the strap to the edge of the end stud as shown will allow the corner fastenings to be installed without having to penetrate the bracing strap.

Concrete floor	Timber floor
400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30 x 2.5mm flat head galvanised nails to each side of the stud. Three 30 x 2.5mm flat head galvanised nails to each side of the plate. Hold down bolt with 50 x 50 x 3mm washer to be fitted within 80mm of the end of the element.	
Internal wall	
 GEB004	 GEB005
External wall	
 GEB006	 GEB007
Note: Where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at gib.co.nz/library.	
2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.	
 GEB008	
Hold-down fastener requirements	
Concrete floor	Timber floor
A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element.	12 x 150mm galvanised coach screw fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element

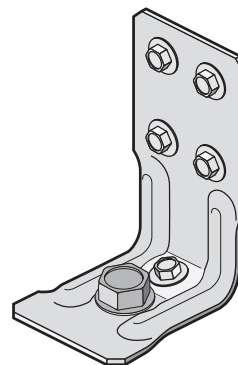


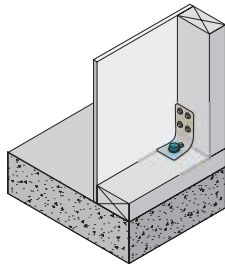
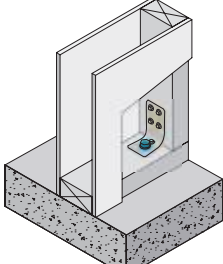
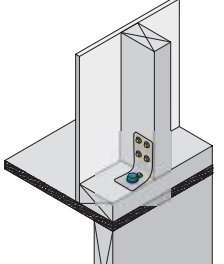
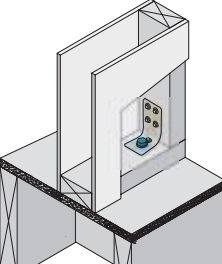
GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit.
- May be fitted at any stage before lining.
- Framing face is clear to allow flush lining.
- Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
			
GEB009	GEB010	GEB011	GEB012
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.	Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.	Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.	Position GIB HandiBrac® in the centre of floor joist or full depth solid block.
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.		12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.	

GIB HandiBrac® placement with GIBFix® Framing System for concrete floors

Figure 18 shows the preferred positioning of the GIB HandiBrac® panel hold-down brackets within the GIBFix® Framing System layout and where they are required by bracing systems with an 'H' in the specification code.

Note that, in corners and at wall junctions, a single GIB HandiBrac® can serve 'H' type bracing elements in both directions, but additional intermediate concrete anchors may need to be installed to meet the minimum requirements of NZS 3604:2011 for bottom plate fixing.

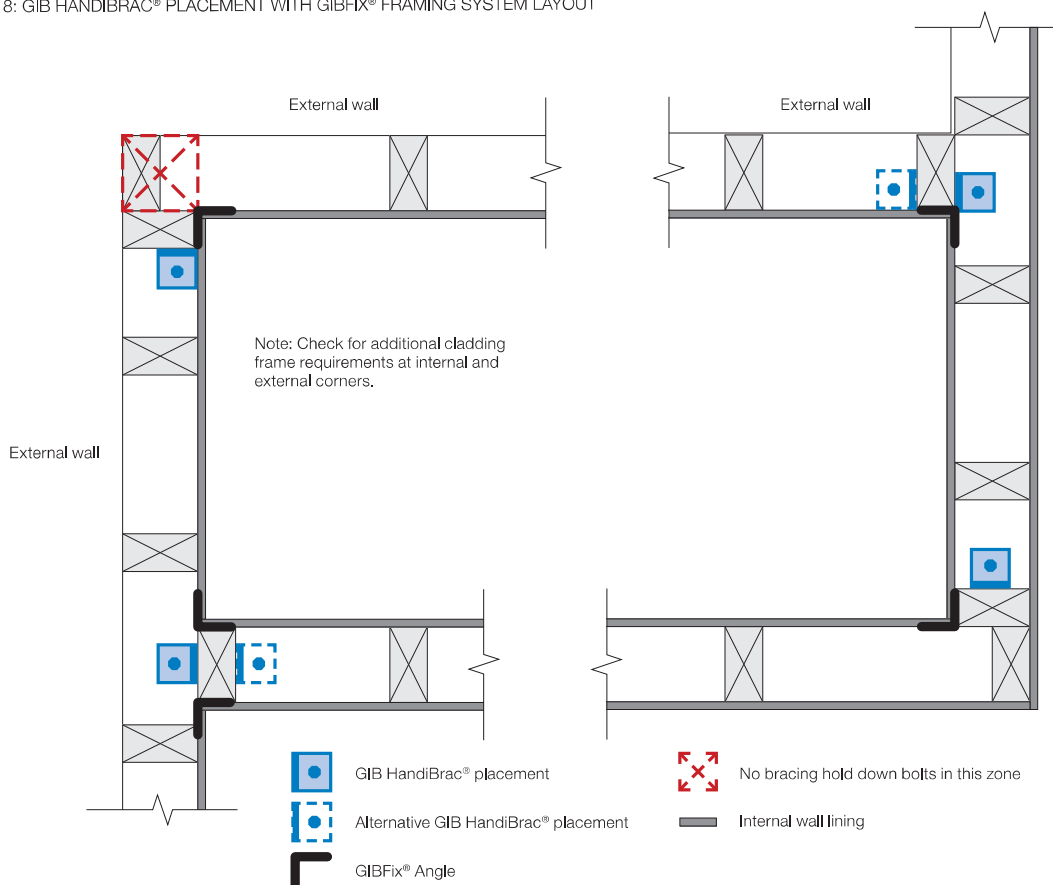
The GIB HandiBrac® is fixed to the stud which has the GIBFix® Angle.

For bracing elements with sheet material both sides of the wall connect corner studs using 8/90mm gun nails as shown in figure 19.

TIMBER FLOORS

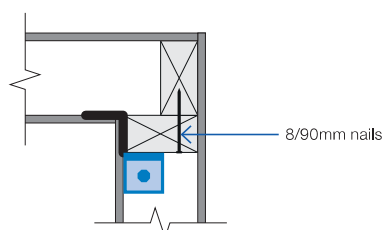
For timber floors bolt fixing in to solid joist or block is required, as shown on p 15.

FIGURE 18: GIB HANDIBRAC® PLACEMENT WITH GIBFIX® FRAMING SYSTEM LAYOUT



GEB013

FIGURE 19: STUD CONNECTION FOR 'H' TYPE BRACING ELEMENTS WITH SHEET MATERIAL BOTH SIDES



GEB014

Ceiling diaphragms

GIB® plasterboard ceiling diaphragms are stiff and strong horizontal elements which effectively transfer loads to bracing walls. They themselves do not have a bracing unit rating but are used when bracing lines exceed 6m separation. The basic shape of a ceiling diaphragm is square or rectangular. Protrusions are permitted but cut-outs are not. The length of a ceiling diaphragm shall not exceed twice its width. Dimensions are measured between supporting bracing lines. Supporting bracing lines shall have a bracing capacity no less than the greater of 100 bracing units or 15 bracing units per metre of diaphragm dimension, measured at right angles to the line being considered, see figure 21.

Limitations for GIB® plasterboard ceiling diaphragms

Ceiling diaphragms may be constructed using any GIB® plasterboard provided perimeter fixing is at;

150mm centres for: Diaphragms up to 7.5m in length, no steeper than 15°.

100mm centres for: Diaphragms up to 7.5m in length, no steeper than 45°. Diaphragms up to 12m in length, no steeper than 25°.

Diaphragms outside these parameters must be specifically designed.

General fixing requirements for GIB® Ceiling Diaphragms:

- Linings must be installed over the entire area of the diaphragm.
- Fastening must be no less than 12mm from sheet edges and not less than 18mm from sheet ends.
- Sheets must be supported by framing members (e.g., ceiling battens) spaced at no more than 500mm centres for 10mm GIB® plasterboard and at no more than 600mm centres for 13mm GIB® plasterboard.
- Sheets within the diaphragm area may be fastened and finished conventionally in accordance with the publication entitled, "GIB® Site Guide". All joints shall be GIB® Joint Tape reinforced and stopped. It is recommended that sheet butt joints are formed off framing and back-blocked (see "GIB® Site Guide").
- Use full width sheets where possible. At least 900mm wide sheets with a length not less than 1800mm shall be used. Sheets less than 900mm wide but no less than 600mm may be used provided all joints with adjacent sheets are back-blocked (see "GIB® Site Guide" and figure 22).
- Fasteners are placed at the specified centres around the ceiling diaphragm with the corners fastened using the GIB EzyBrace® fastener pattern.

FIGURE 20: PROTRUSIONS AND CUTOUTS

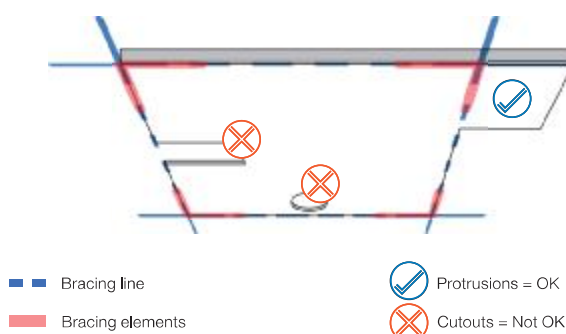


FIGURE 21: DIAPHRAGM BRACING LINING SPACINGS

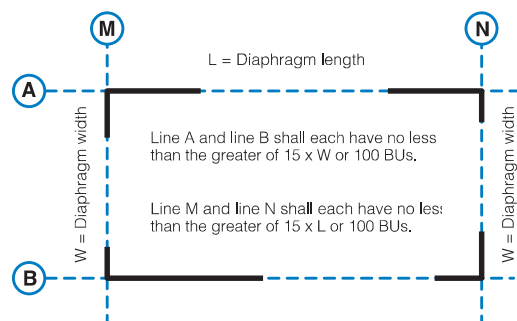


FIGURE 22: GIB® CEILING DIAPHRAGM SHEET WIDTHS AND LENGTHS

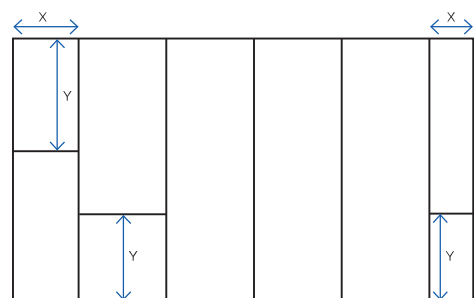
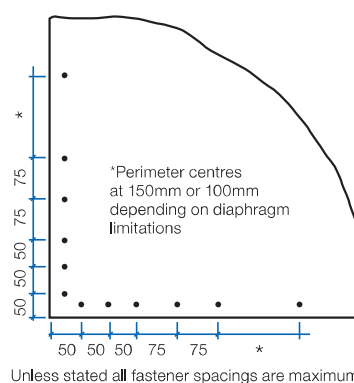


FIGURE 23: GIB EZYBRACE® FASTENER PATTERN



GEB015

Ceiling battens in ceiling diaphragms

Ceiling diaphragms may be constructed using steel or timber ceiling battens.

Battens shall be spaced at a maximum of:

- 500mm for 10mm GIB® plasterboard.
- 600mm for 13mm GIB® plasterboard.

Timber battens shall be fixed in accordance with the requirements of NZS 3604:2011.

Metal battens shall be GIB® Rondo® battens with two external flanges of 8mm to allow direct screw fixing to roof framing.

GIB® Rondo® metal battens shall be fixed with 2/32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws to supporting framing.

GIB® Rondo® metal battens must be fixed directly to the roof framing. If a clip system has been used, a timber block (min 300mm) or a continuous timber member can be fixed alongside the bottom chord to permit a direct connection to the batten, see figure 26.

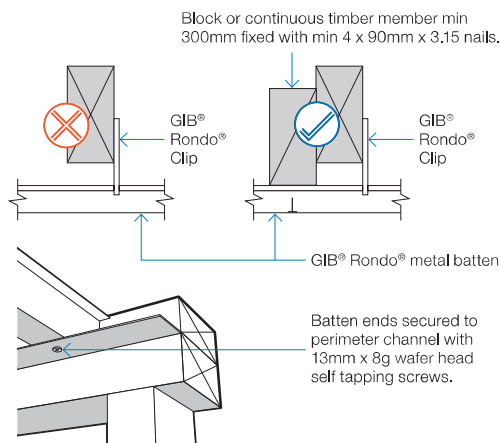
For GIB® Rondo® metal battens, a GIB® Rondo® metal channel or metal angle is required at the perimeter of the diaphragm. The perimeter channel shall be fastened to the top plate with 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screw at 300mm centres maximum.

Linings are fastened to metal using 25mm x 6g GIB® Grabber® Self Tapping screws and to timber framing using 32mm x 6g GIB® Grabber® High Thread screws. Alternatively 32mm x 7g GIB® Grabber® Dual Thread screws can be used in both cases. Fastener centres are specified on p.18.

Coved ceiling diaphragms can be achieved by using nominally 32 x 32 x 0.55mm proprietary galvanised metal angles ("back-flashing") at the changes in direction. These angles shall be:

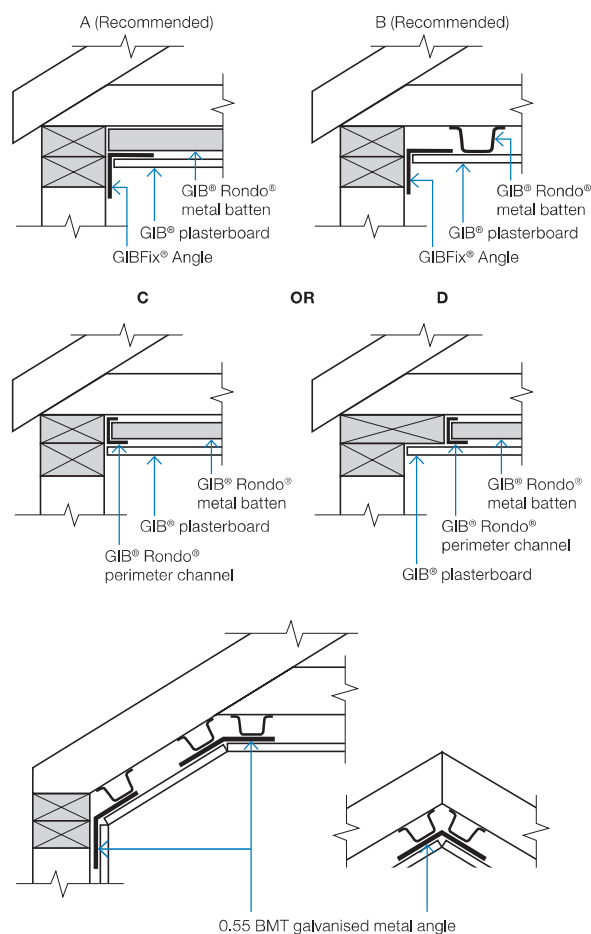
- Fastened at 300mm on each edge to metal battens using 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screws.
- Fastened to timber framing using 32mm x 7g GIB® Grabber® Dual Thread screws when linings are installed.

FIGURE 26: GIB® RONDO® METAL CEILING BATTEN INSTALLATION



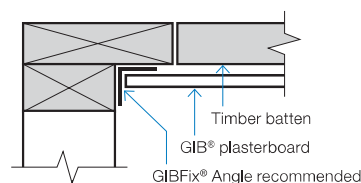
GEB016

FIGURE 27: GIB® RONDO® METAL CEILING BATTENS WITH CORNER ANGLES



GEB017

FIGURE 28: TIMBER CEILING BATTENS*



GEB018

Openings in ceiling diaphragms

SMALL OPENINGS

Small opening (e.g. down lights) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the ceiling diaphragm.

LARGE OPENINGS

Openings are allowed within the middle third of the diaphragms length and width. Fixing of sheet material to opening trimmers shall be at 150mm centres. Neither opening dimension shall exceed a third of the diaphragm width. Larger openings or openings in other locations require specific engineering design.

Where fireplace flue or range hood openings are required in a ceiling diaphragm use a galvanised metal backing plate as shown in figure 25, with a maximum hole diameter of 350mm.

Figure 25 can also be used for range hood openings in walls.

For information on openings in ceiling diaphragms contact the GIB® Helpline on 0800 100 442.

FIGURE 24: LARGE OPENINGS IN CEILING DIAPHRAGMS

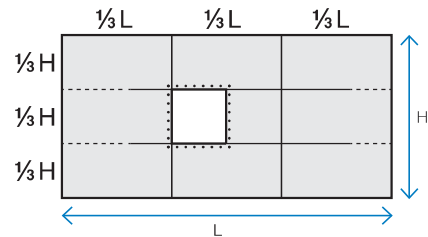
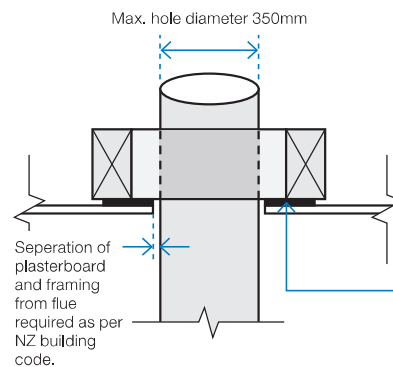


FIGURE 25: FIREPLACE FLUES AND RANGE HOOD OPENINGS

Section view



Steel plate

0.55 BMT
Galvanised sheet
Max. opening
350mm diameter.
Installed prior to
GIB® plasterboard.

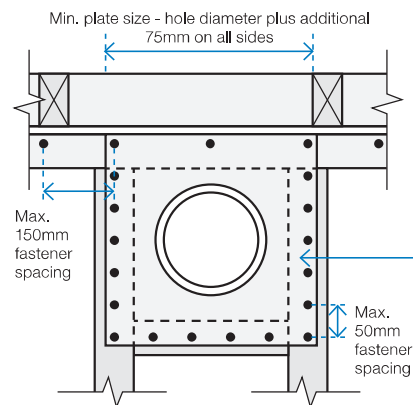
Framing

90 x 45mm framing
trimmed to provide
extra fixing.

GIB® plasterboard ceiling

Installed over the
steel plate and into
framing using a
minimum of 32mm
x 6g GIB® Grabber
High Thread or
32mm x 7g GIB®
Grabber Dual Thread
screws at 50mm
max centre spacing.

Plan view



Plasterboard ceiling not shown in plan view

Length of GIB EzyBrace® elements ('N' Type)

The length of GIB EzyBrace® elements with an 'N' extension (requiring standard NZS3604:2011 plate connections) can be taken as the full frame length measured from the outside of the end-stud to the opening face as illustrated in figures 29-32.

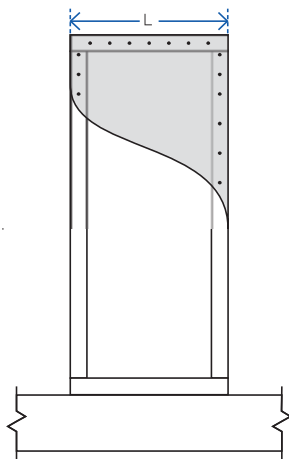
'N' type GIB EzyBrace® elements are identified by GIB® specification numbers GS1-N, GS2-N and GS2-NOM

The dimension 'L' shall not be less than 400mm.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening.

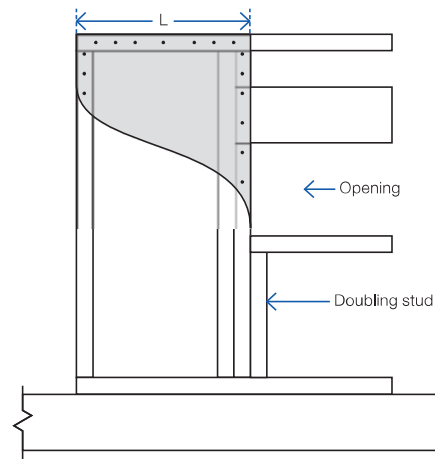
Fastener spacings and diagram scales shown in Figures 29–32 are indicative only. Refer to p.23–30 for construction details.

FIGURE 29: GS BRACING ELEMENTS (OPTION A)



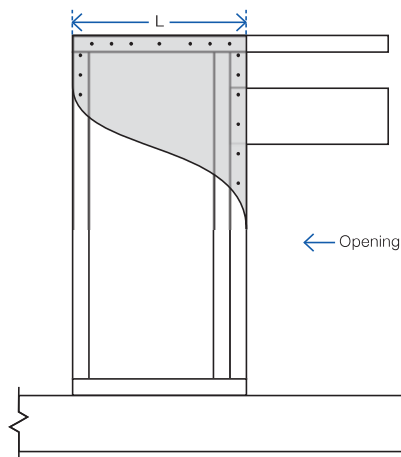
GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 30: GS BRACING ELEMENTS (OPTION B)



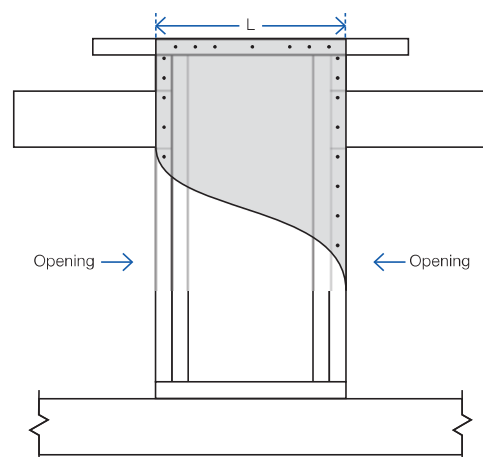
GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 31: GS BRACING ELEMENTS (OPTION C)



GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 32: GS BRACING ELEMENTS (OPTION D)



GS1-N, GS2-N elements
'L' indicates the length of the bracing element

Length of GIB EzyBrace® elements ('H' Type)

GIB EzyBrace® elements with an 'H' extension (requiring special panel hold-down fixings) can be used when the dimension 'L' as illustrated in figures 33–36 is 400mm or more.

'H' type GIB EzyBrace® elements are identified by GIB® specification numbers GSP-H, BL1-H, BLG-H and BLP-H.

The length of an 'H' type element is not only determined by the sheet material, but also by the placement of the hold-down fixings.

Hold-down fixings cannot be placed closer together than what is shown for the standard panel in figure 33.

Hold-down fixings can be placed under windows provided sill trimming studs beneath the opening are connected to the bracing element using 8/90mm gun nails, as illustrated in figure 34.

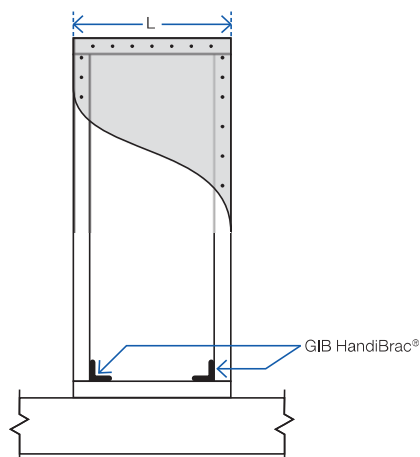
Spike doubling stud to trimming stud using a minimum of 2/90mm gun nails at 600mm centres. Lintel straps (where required for wind uplift) should be checked in and be located away from the bracing element fasteners.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening as indicated in figures 34–36.

When using bracing straps, installed in accordance with p.17, fix the strap to the same framing member as shown for the GIB Handibrac® below, and install the adjacent anchor bolt in the same position as the GIB Handibrac® bolt.

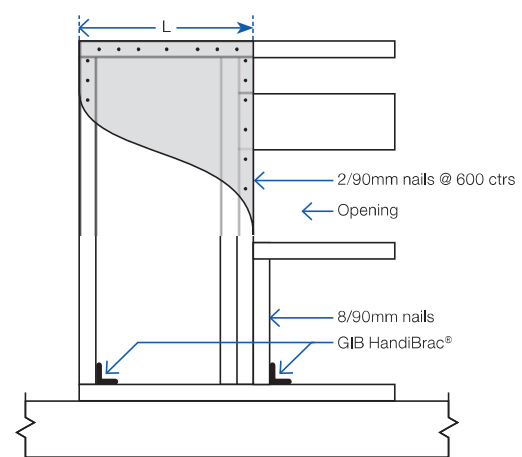
Fastener spacings and diagram scales shown in figures 33–36 are indicative only. Refer to p.23–30 for construction details.

FIGURE 33: BL BRACING ELEMENTS (OPTION A)



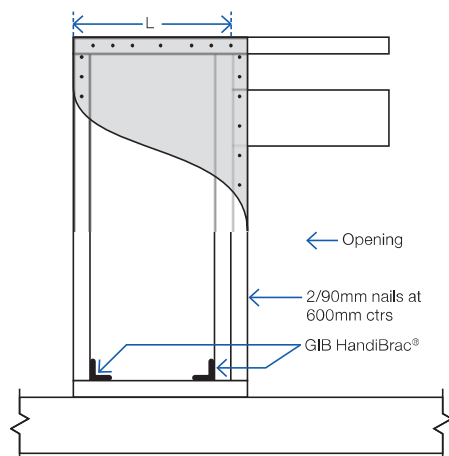
'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 34: BL BRACING ELEMENTS (OPTION B)



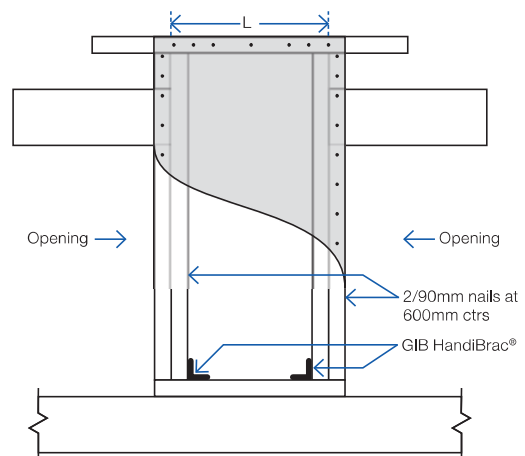
'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 35: BL BRACING ELEMENTS (OPTION C)



'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 36: BL BRACING ELEMENTS (OPTION D)



'H' type elements with specific hold downs
'L' indicates the length of the bracing element



GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

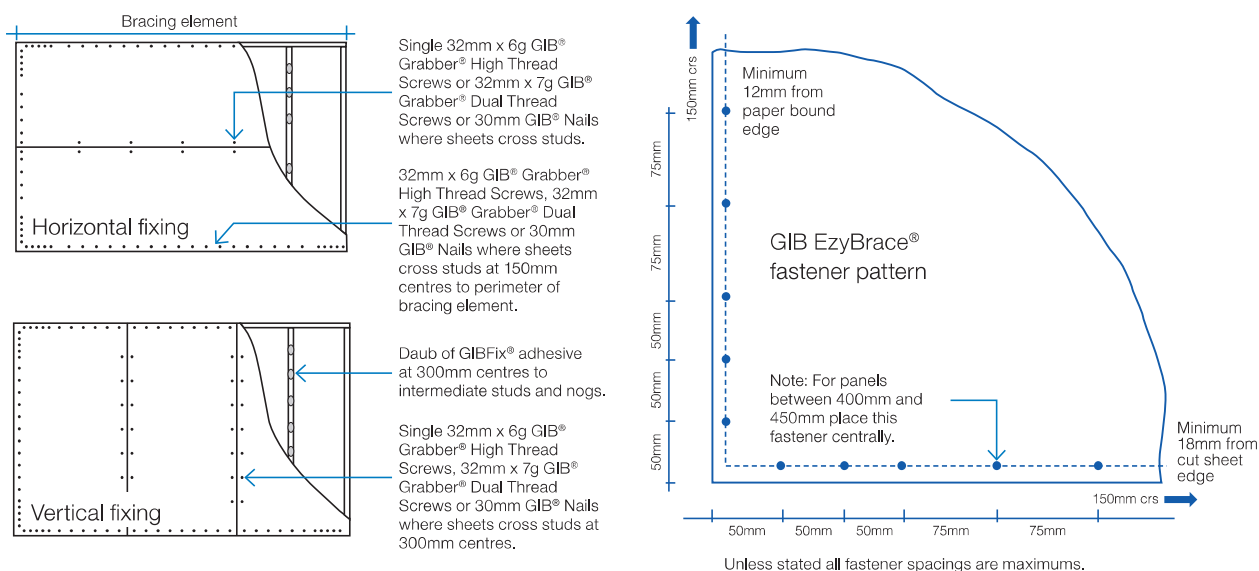
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification GS2-NOM

Specification code	Minimum length (m)	Lining requirement
GS2-NOM	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100mm x 3.75mm nails at 600mm centres; or three power driven 90mm x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75mm x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

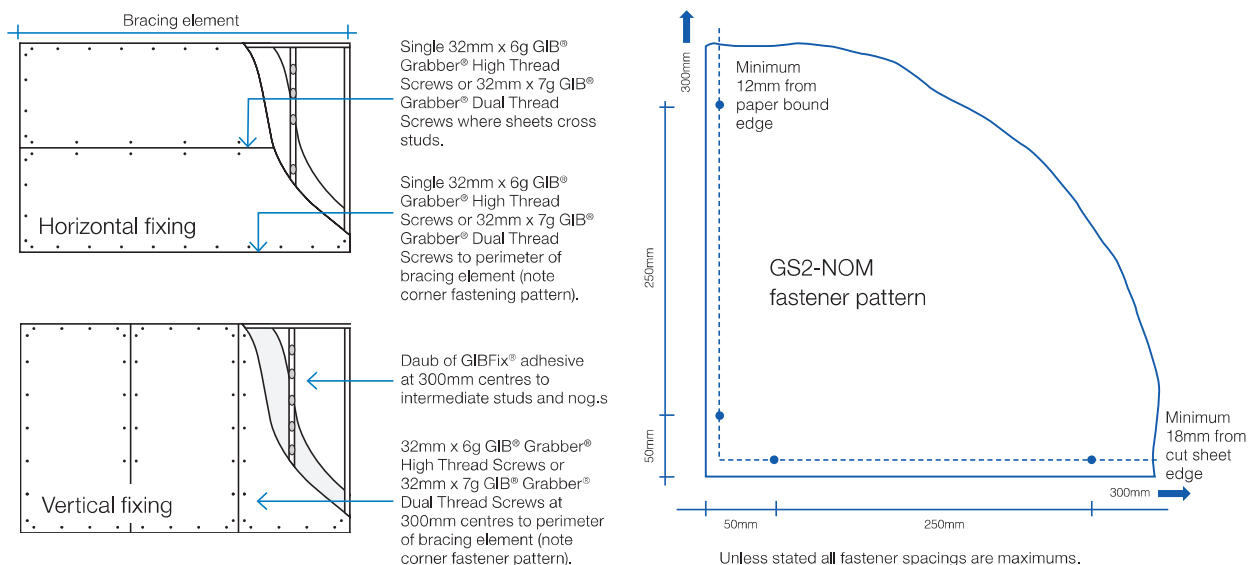
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Angle use 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50, 300mm from each corner and 300mm maximum thereafter around the perimeter of the bracing element. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

GS2-NOM ADHESIVE FIXING OPTION AT DOOR JAMBS

As an alternative to using screw fixings, a continuous 6-10mm bead of solvent based GIBFix® All-Bond can be applied along the full height studs immediately adjacent to an internal door opening and at the door lintel or head trimmer. The lining is then bedded into the adhesive and installed into the rebated jamb, as shown in figure 38.

This solvent based adhesive option may only be used with GS2-NOM specification and is designed to reduce popping of fasteners around door openings on internal walls.

FIGURE 37: SCREW FIX FOR OPENINGS

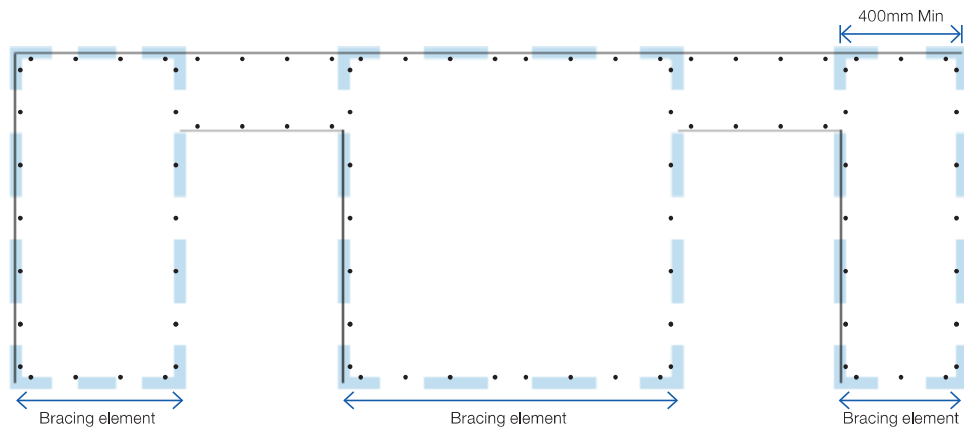
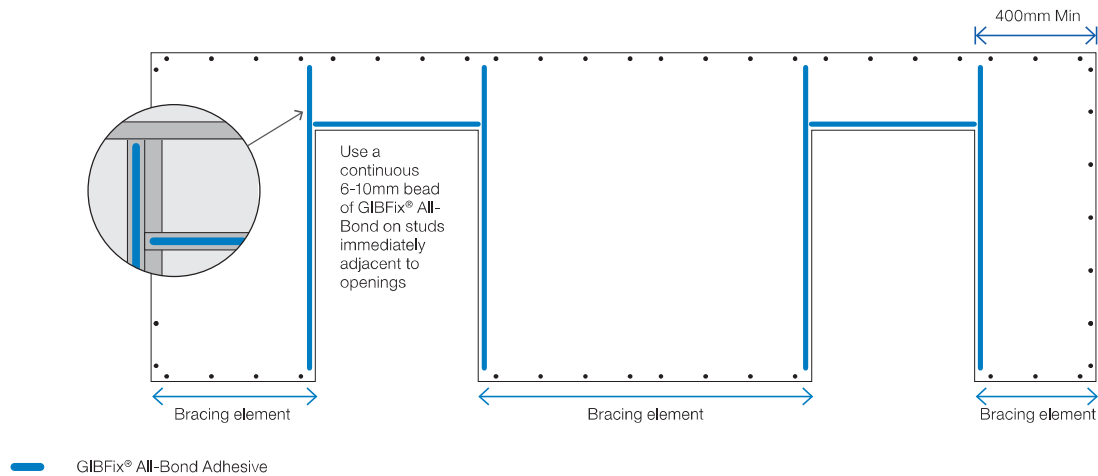
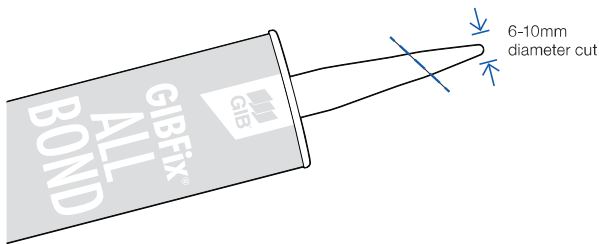


FIGURE 38: SCREW AND ADHESIVE FIX FOR OPENINGS



ADHESIVE NOZZLE APERTURE





GIB EzyBrace® Systems specification GS2-N

Specification code	Minimum length (m)	Lining requirement
GS2-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber Floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

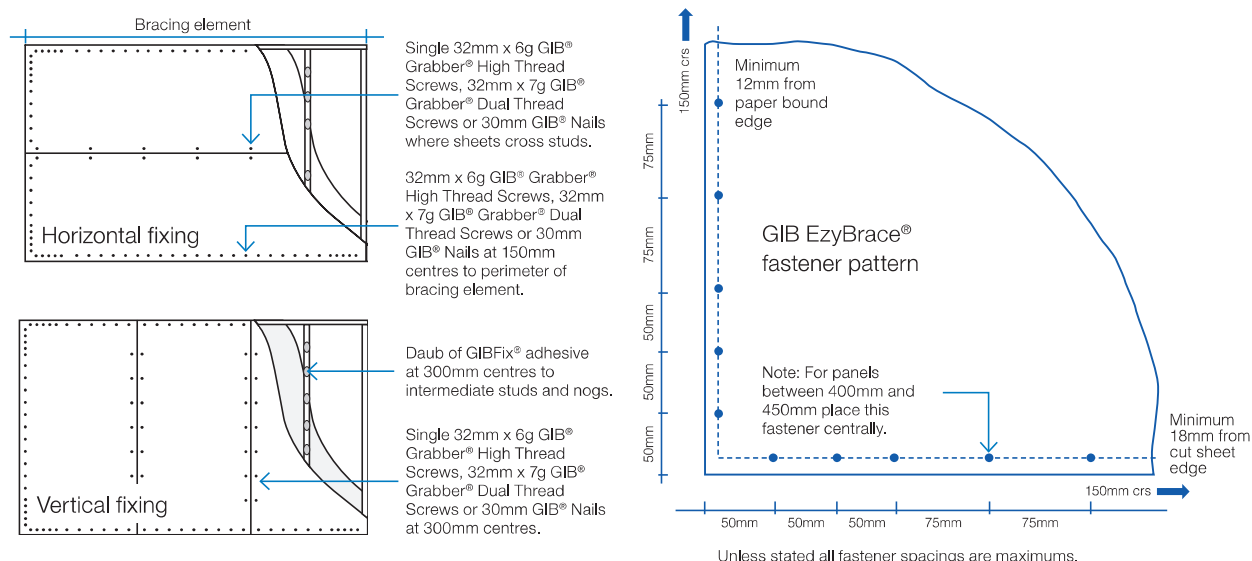
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification GSP-H

Specification Code	Minimum length (m)	Lining requirement	Other requirements
GSP-H	0.4	Any 10mm or 13mm GIB® plasterboard lining to one side of framing and minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally, with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails.

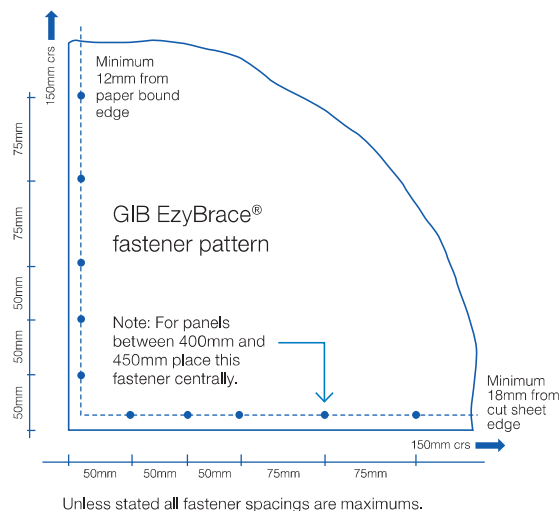
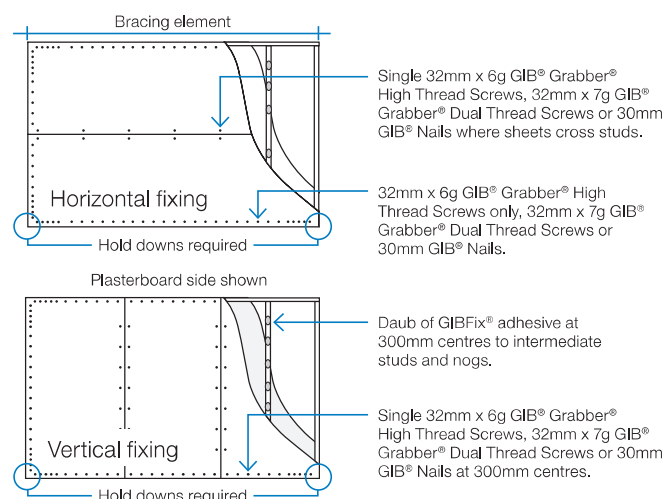
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails.

Fastener centres

GIB® plasterboard side: 50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or
Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

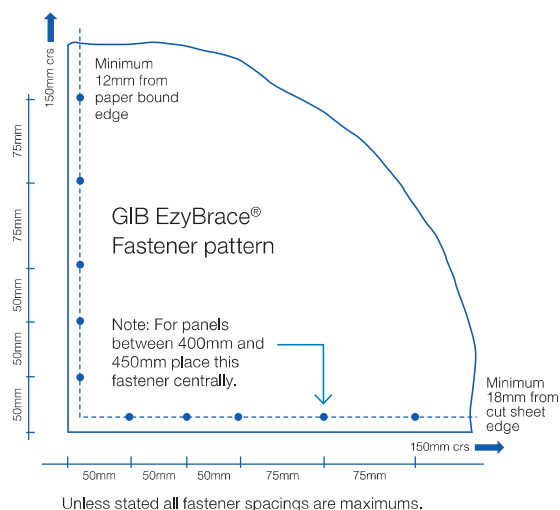
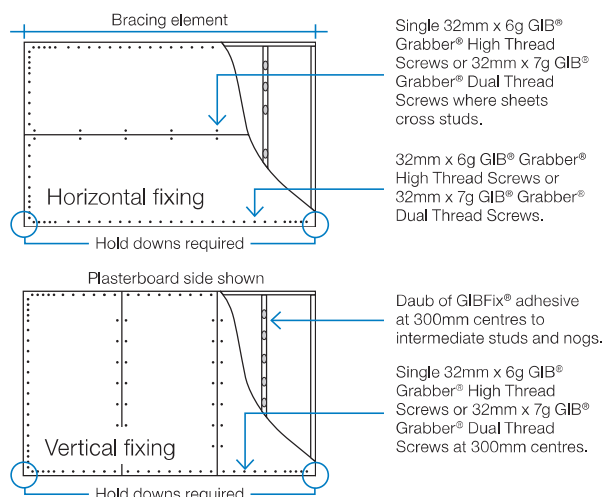
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification BLG-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLG-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus any 10mm or 13mm GIB® plasterboard to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems 2011 or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus any 10mm or 13mm GIB® plasterboard lining to the other side.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Other side: 32mm x 6g GIB® Grabber® High Thread Screws, 30mm GIB Nails or 32mm x 7g GIB® Grabber® Dual Thread Screws.

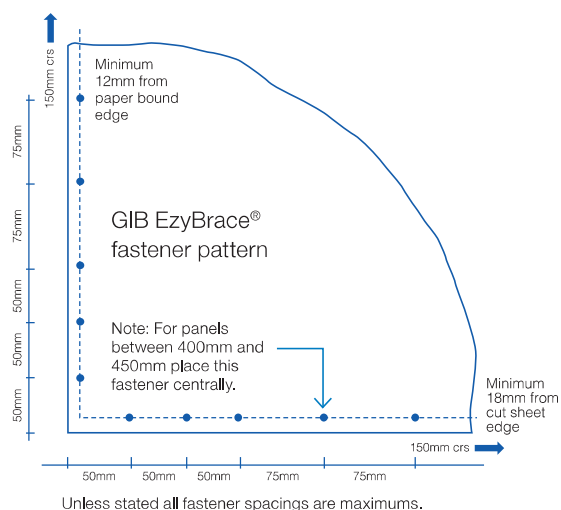
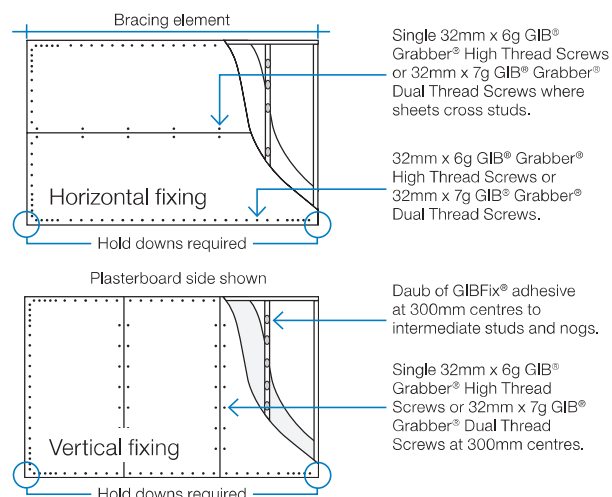
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or
Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

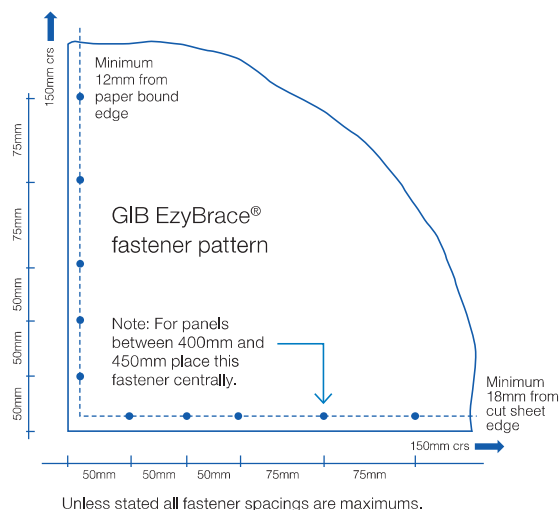
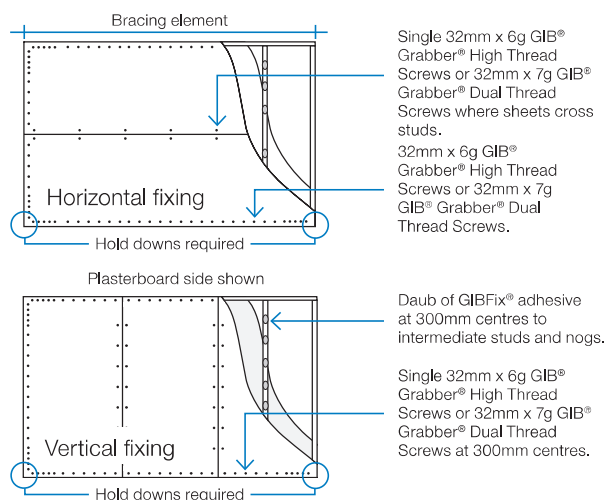
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

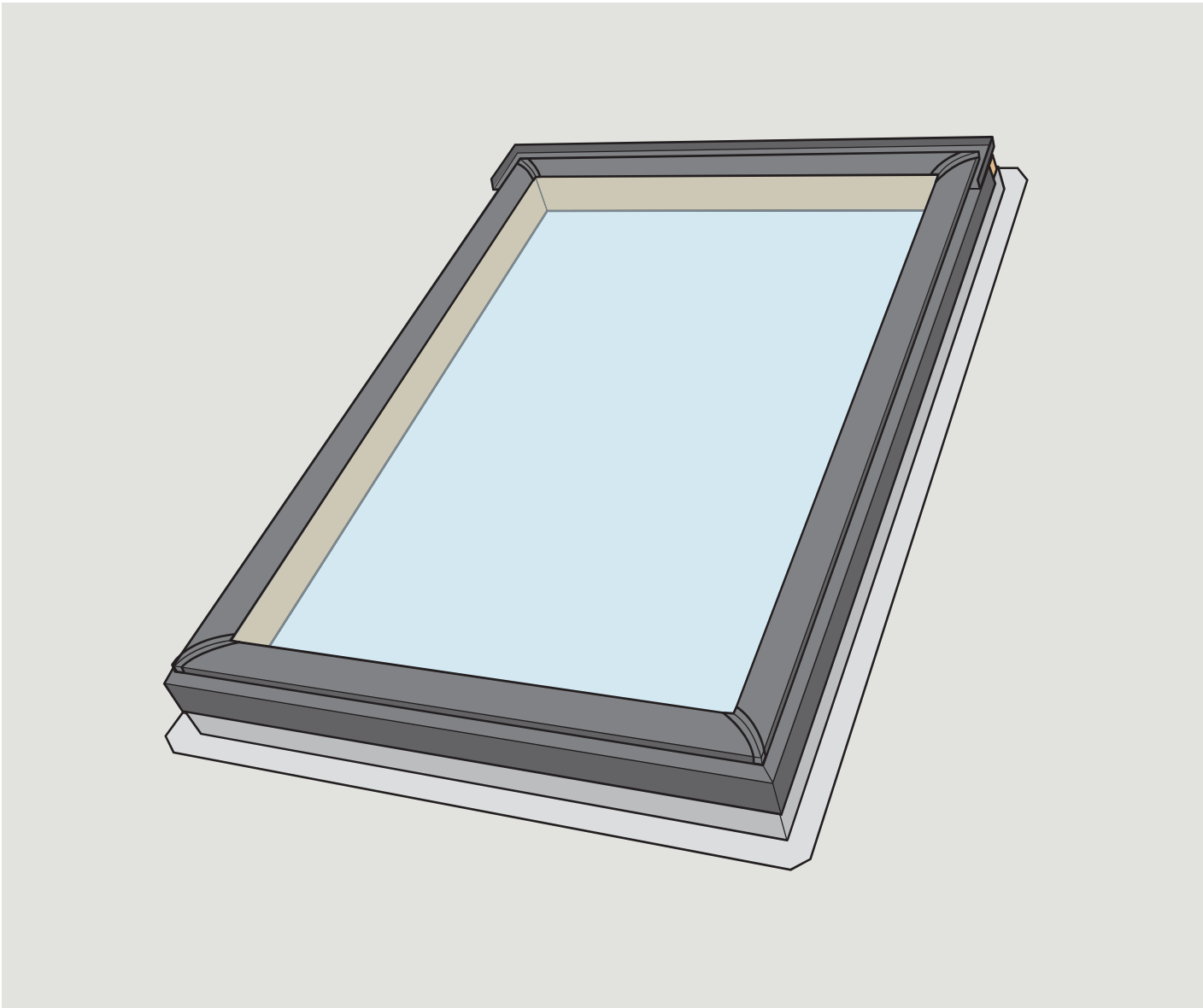
Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



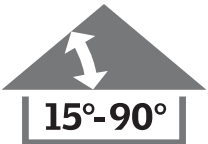
In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



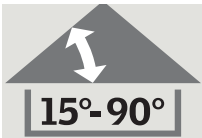
FS



FS Deck Mounted Skylight Installation Instructions



VAS 452262-0909



FS is designed for roof pitch 15-90 deg.

Accessories

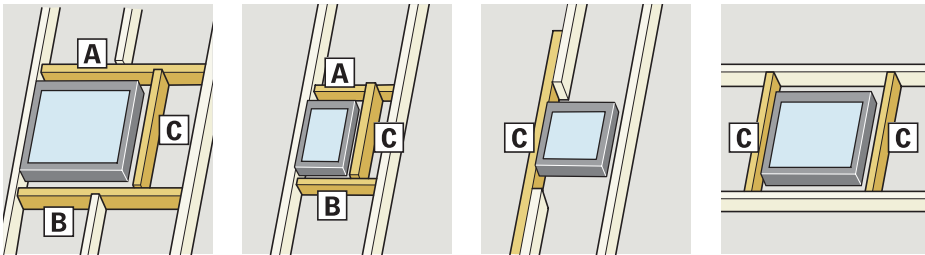
Refer to instructions for accessory type in question or contact VELUX for further information.

Vapor barrier

Where a vapor barrier is part of the roof construction, this barrier must be extended and connected to the skylight finish groove.

Treatment of wooden frame

Most VELUX skylights are pre-painted white and require no on-site painting. Stain grade skylights (available on order) have a temporary treatment against mould and mildew. Further treatment with wood stain, paint etc is necessary and can be done prior to installation or shortly after installation. Care should be taken to ensure wood stain, paint etc is not applied to gaskets.



Roofing rafters

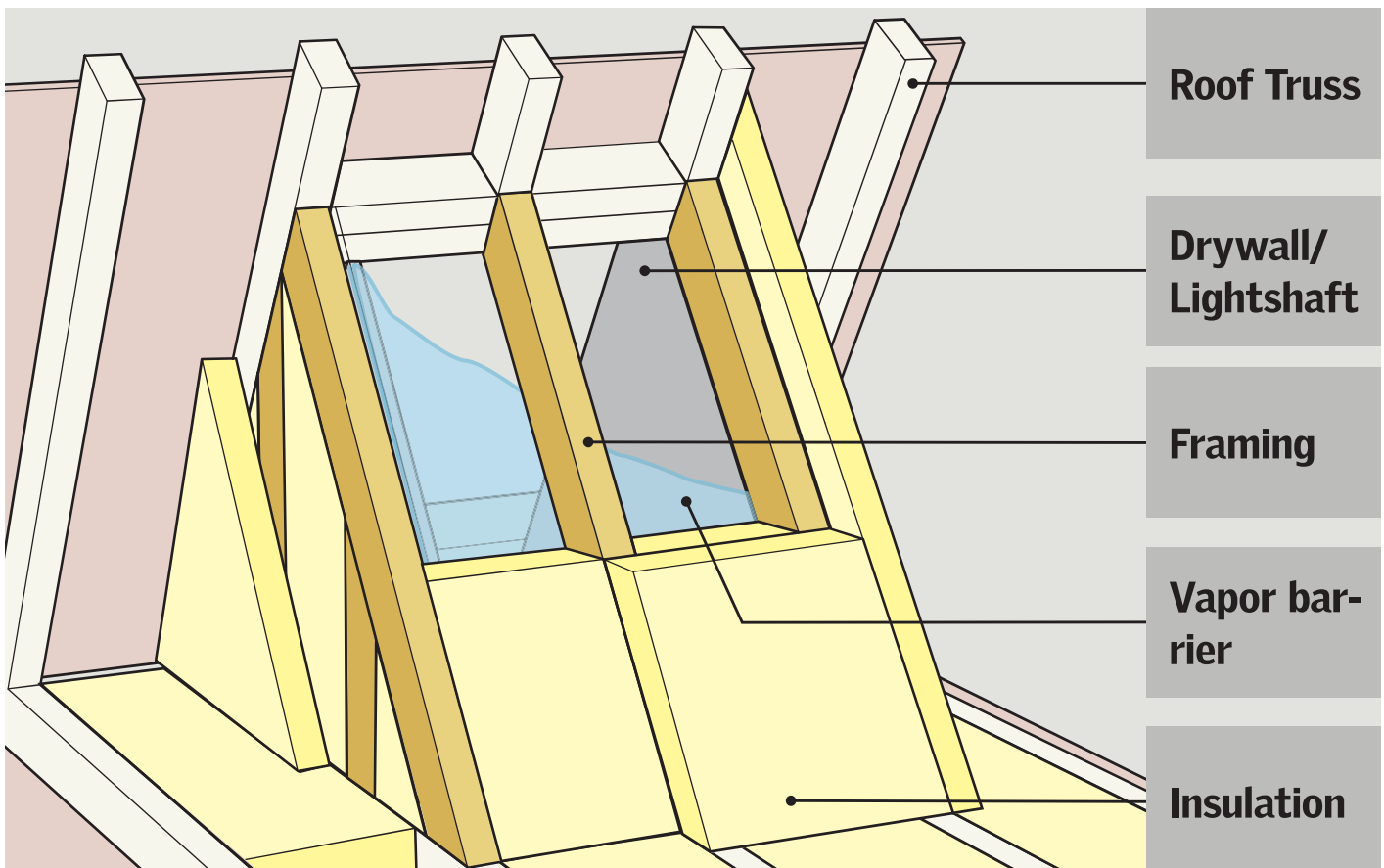
The skylight must be supported by roofing rafters as shown. Install top, side and bottom support rafters when necessary.

A: Top support rafter.

B: Bottom support rafter.

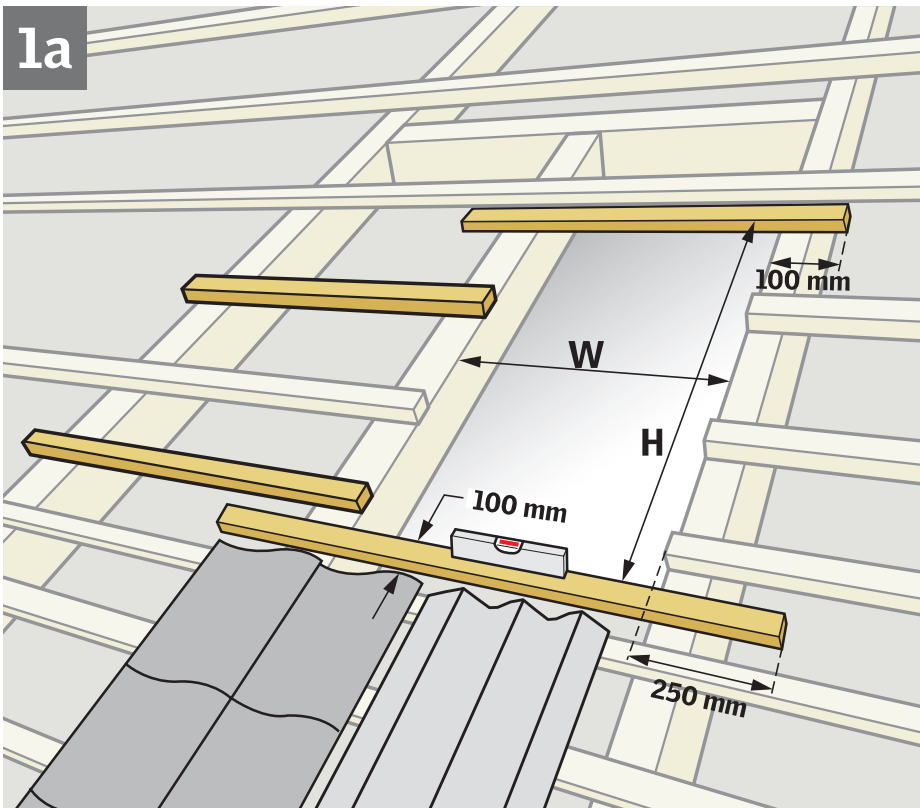
C: Side support rafter

Planning for your VELUX skylight - Lightshaft application



Framing out

1a



Tiles and new Metal roofing with EDW flashing

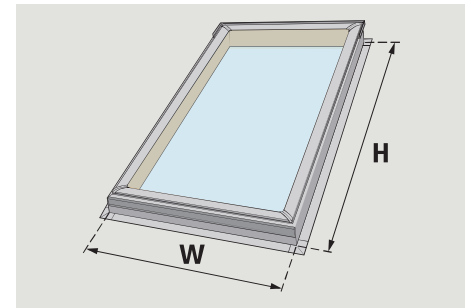
Tiles and new Metal sheet roofing with EDW
Prepare the rough opening to match the size of the skylight frame.

Install installation battens at top and bottom as shown and add support battens at the sides as necessary to support the flashing minimum 2-3 places.

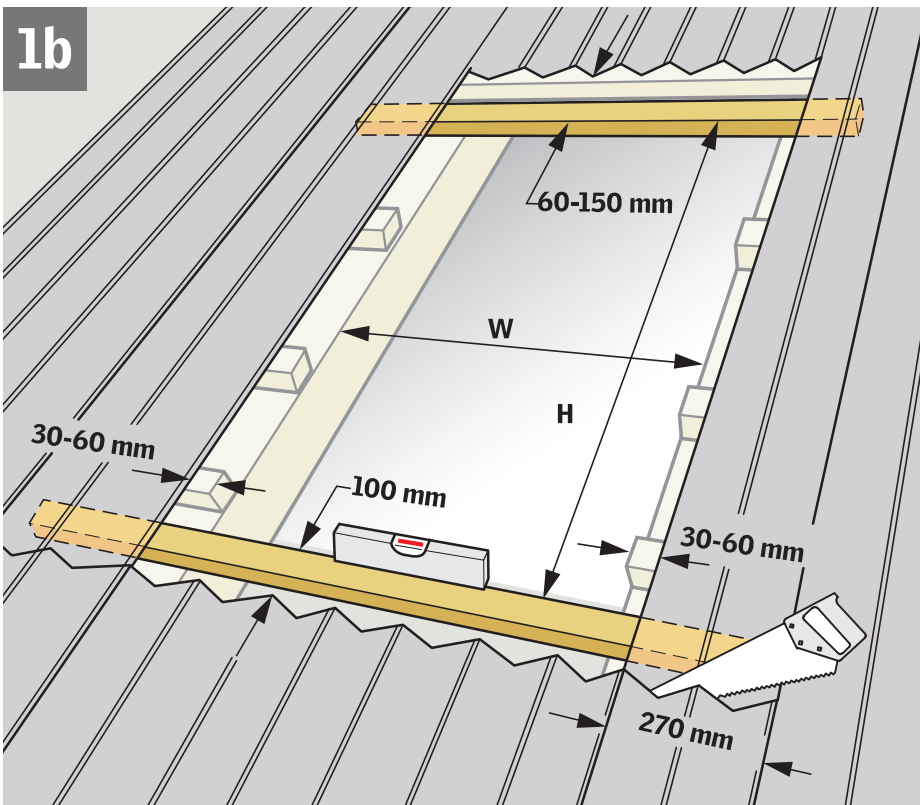
Keep 100 mm distance from edge of roofing material to top edge of installation batten.

For tiles, ensure that the bottom of skylight frame is fitted above a complete course of tiles.

Check for level.



1b



Existing Metal sheet roofing with EDW flashing.

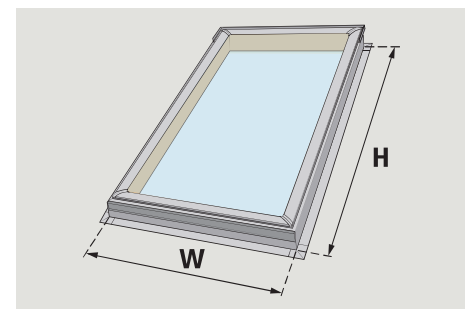
Cut the metal sheets as shown, taking care to maintain the correct distance to the rough opening.

Finish the rough opening to match the size of the skylight frame.

Install installation battens as shown and hearers and jack rafter as necessary.

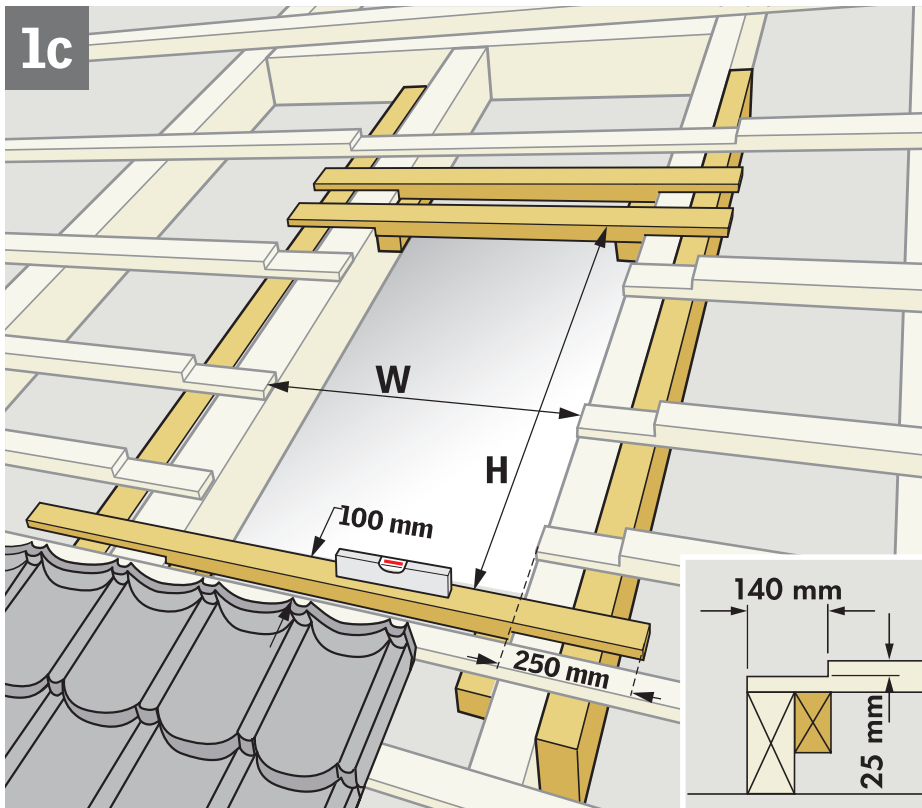
Check for level.

Important: Install the EDW head flashing section before installing the skylight.



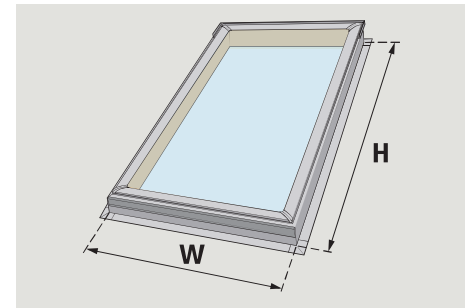
Framing out

1c

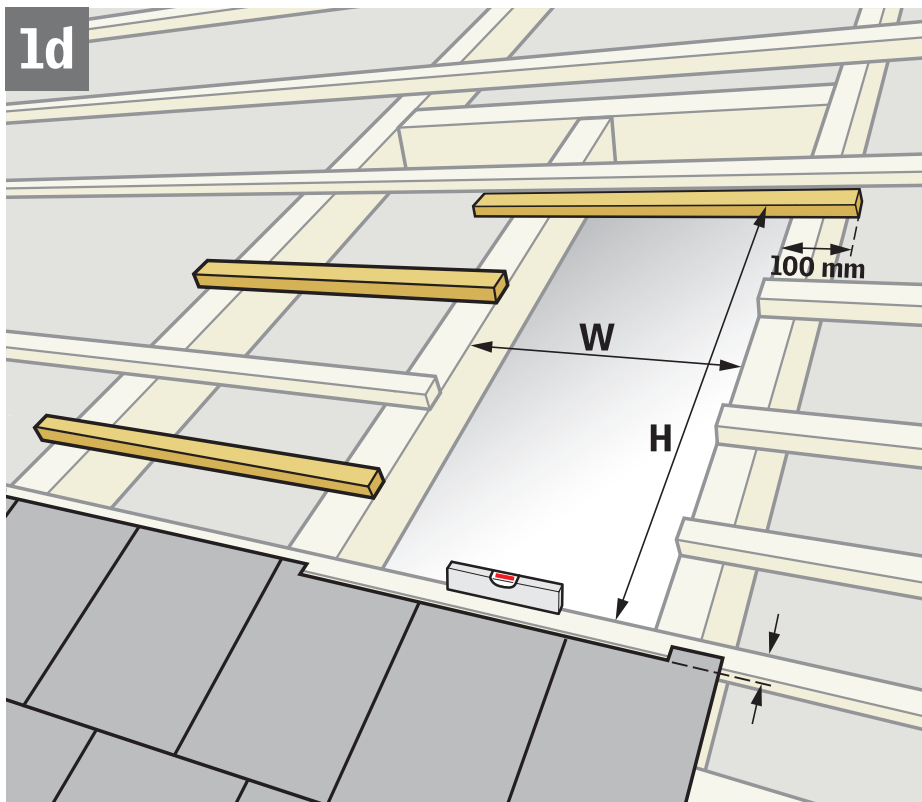


DECRA®, HARVEY™ or CORONA® roofing material with EDW flashing

Prepare the rough opening to match the size of the skylight frame.
Install installation and support battens as shown and headers and jack rafter as necessary. Installation battens and support battens must be recessed 25 mm below batten level. Keep 100 mm distance from edge of roofing batten to top edge of installation batten. Check for level.
Cut roofing battens down 25 mm deep at sides and at top and 140 mm wide at sides. Install an extra trimmer to support the weakened roofing battens.

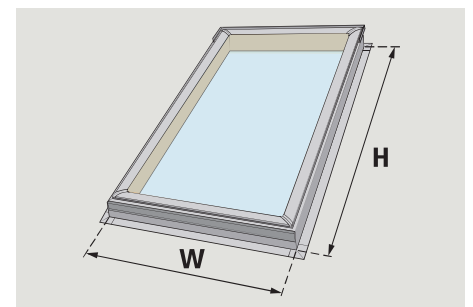


1d

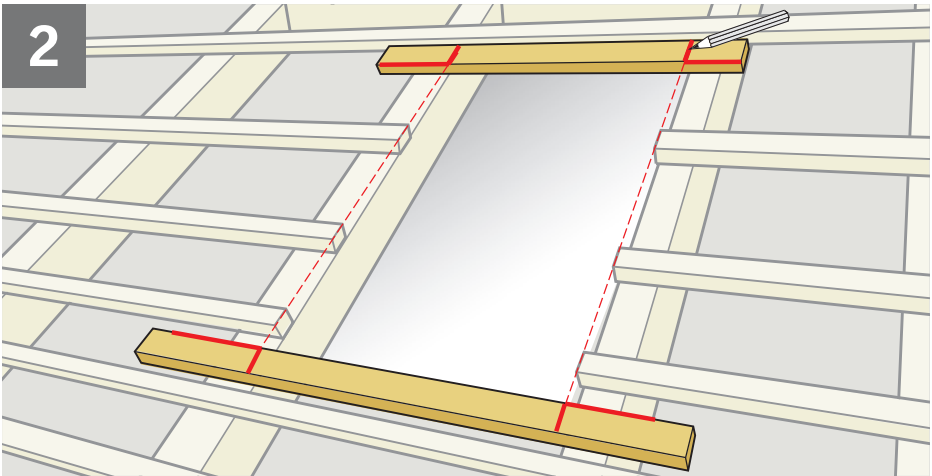


Shingles / Slates with EDL flashing

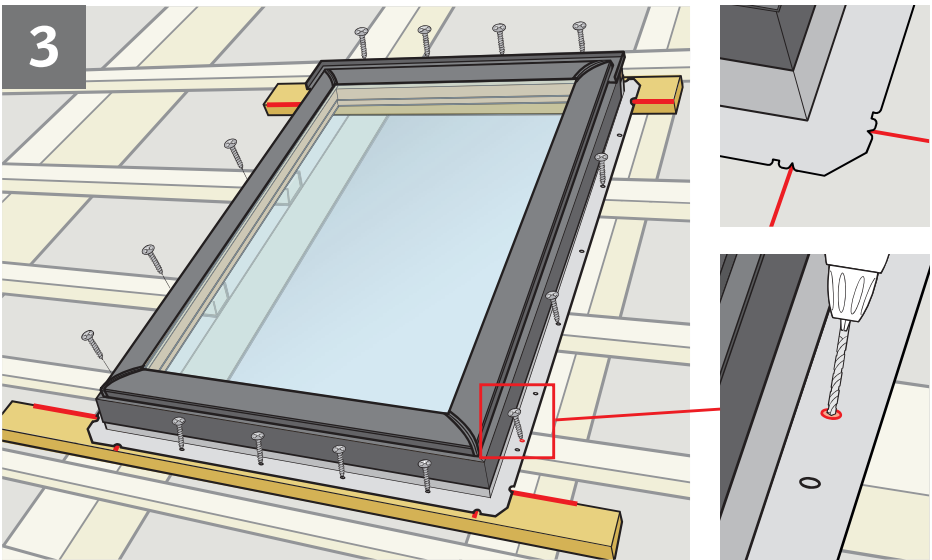
Tiles and new Metal sheet roofing with EDW
Prepare the rough opening to match the size of the skylight frame.
Install installation batten at top as shown and add support battens at the sides as necessary to support the flashing minimum 2-3 places. Check for level.



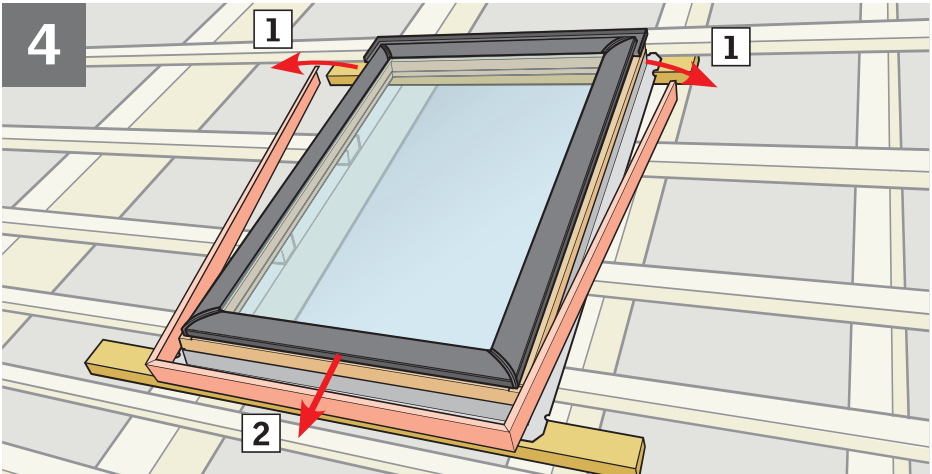
Attachment of skylight



Mark corners of the rough opening.

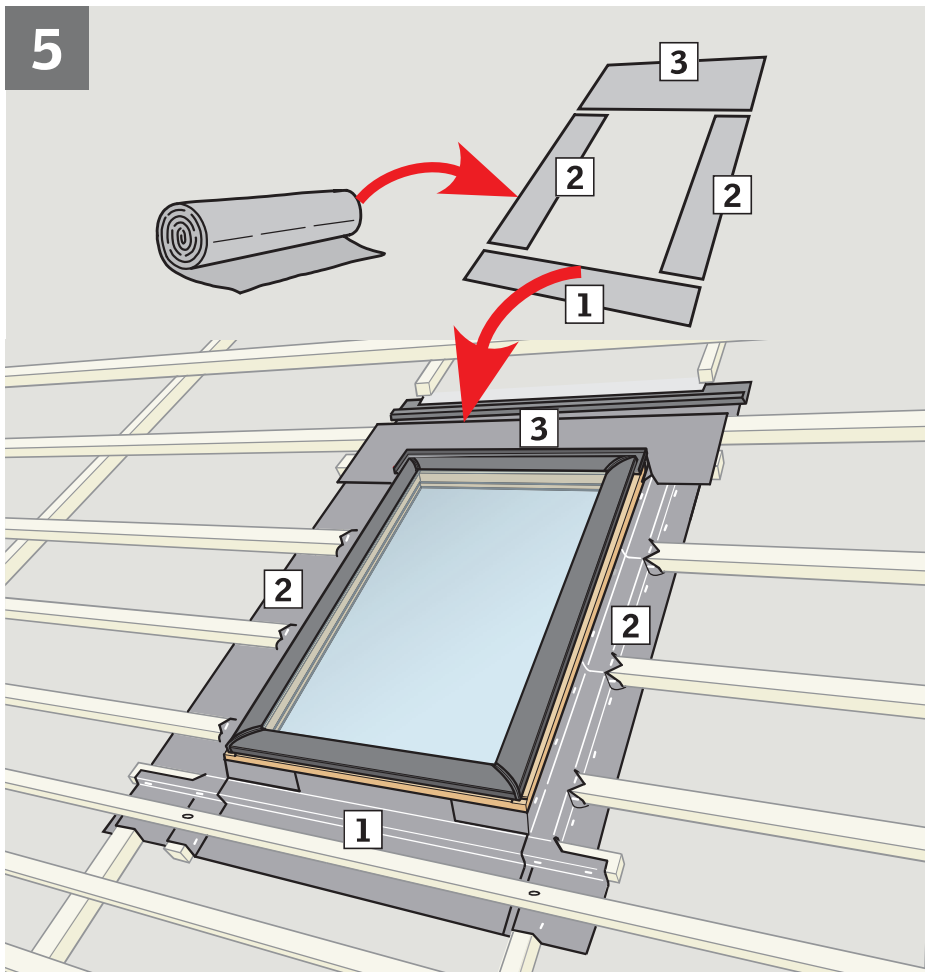


Center the skylight over the rough opening as shown.
Attach skylight with fasteners provided.
Drill new holes if existing does not align with the roofing battens.

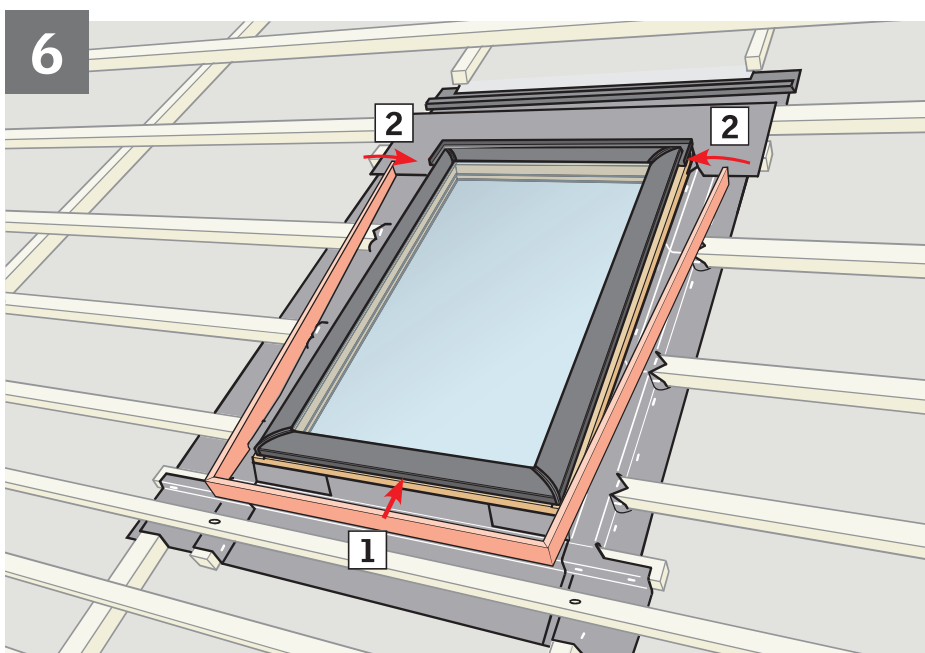
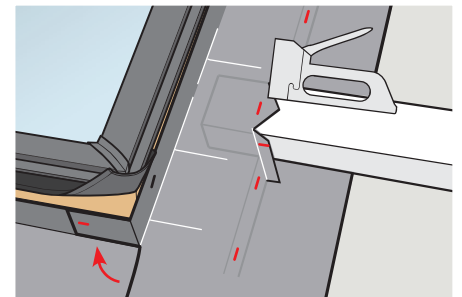
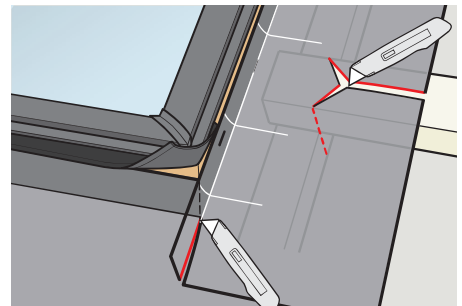


Remove coverings if underlayment is going to be used

Installation of roofing underlay

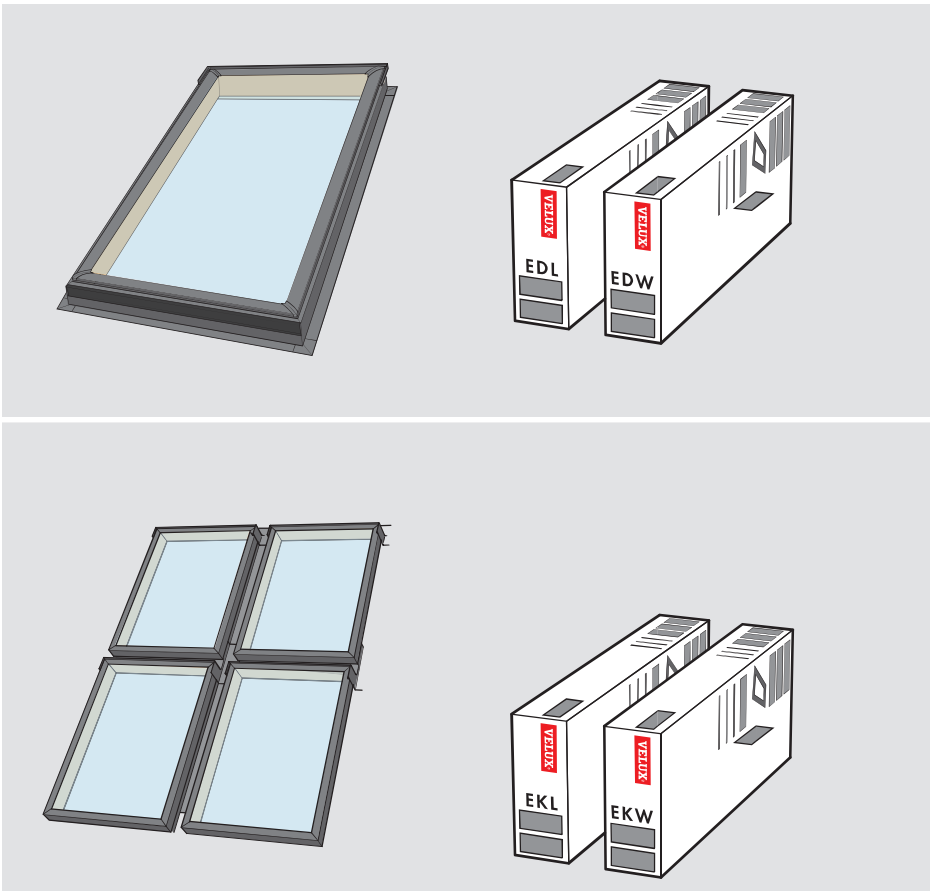


If roofing underlay is used: Dress roofing underlay up around all four sides of the frame. Roof with counter battens shown for illustration purpose.

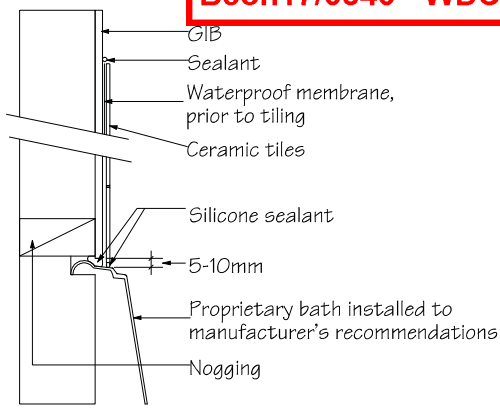


If flashing is not to be installed immediately, replace the cladding parts starting at the bottom. Interlock side frame claddings with bottom frame cladding as shown. Ensure top casing/ top frame cladding is placed in position **3**. Secure the claddings with the original screws.

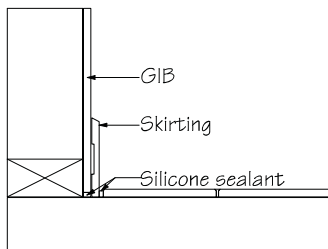
Flashing



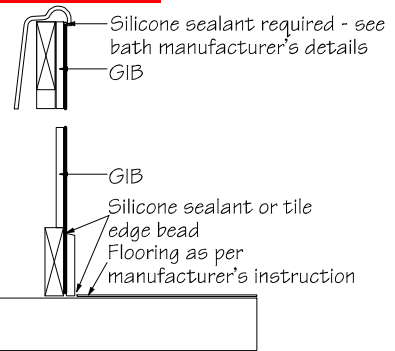
For flashing information, see instructions supplied with the relevant flashing.
Contact VELUX for grouping / combi installation of skylights.



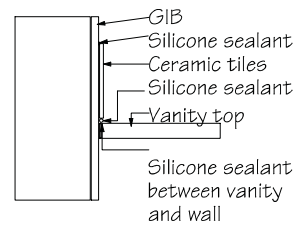
A Bath/Wall Detail
B Bath - Tiled Wall



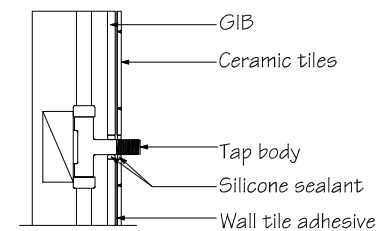
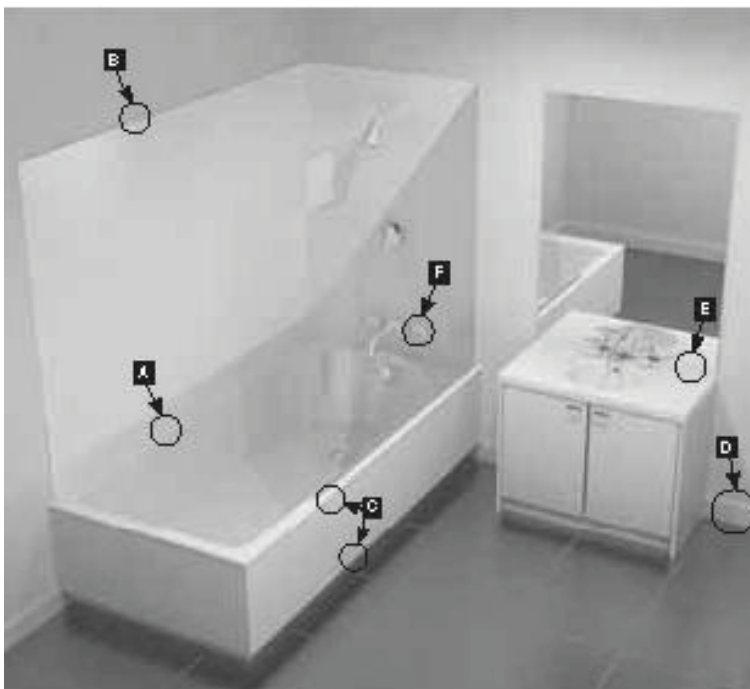
D Wall/Floor Detail
Shower - Tiled Walls and Acrylic Base GAW-DO29



C Bath Plinth Detail
Bath - Tiled Upstand GAW-DO16



E Vanity Top Detail
Bath - Tiled Upstand GAW-DO17



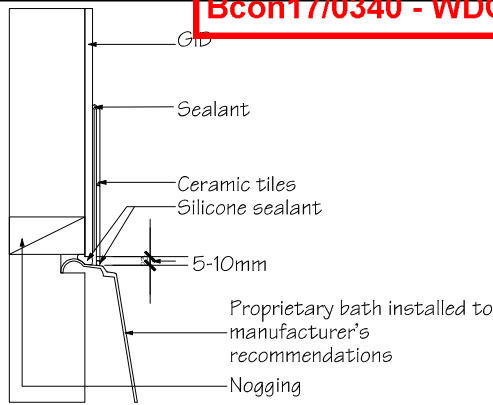
Note:
Where impact noise from pipes is an issue, fix all pipes on resilient brackets.

F Penetration Detail
Bath - Tiled Upstand GAW-DO15

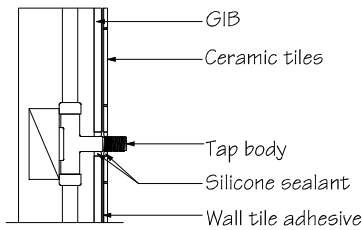
Note all construction to comply with New Zealand Standards and relevant NZBC clauses

Title Bath - Tiled Shower Over Bath

Drawn. SC	Date 14-08-09	Chk.	Client
Sales HQ	Plot Date 30/03/2010	Scale @ A4 NTS	Details
Job Number 00			

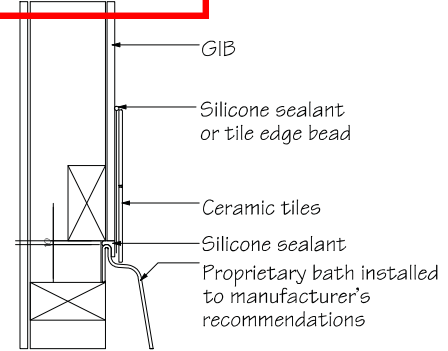


A Bath/Wall Detail
Bath - Tiled Upstand GAW-DO13

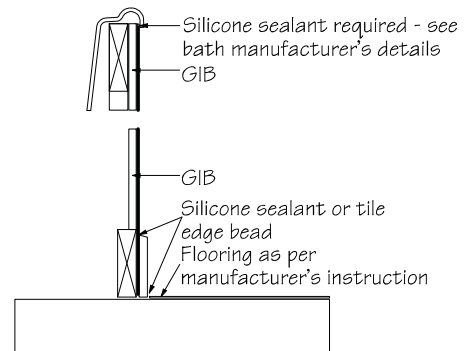


Note:
Where impact noise from pipes is an issue, fix all pipes on resilient brackets.

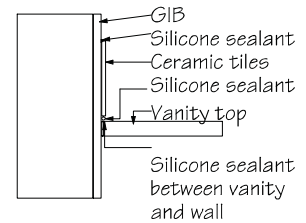
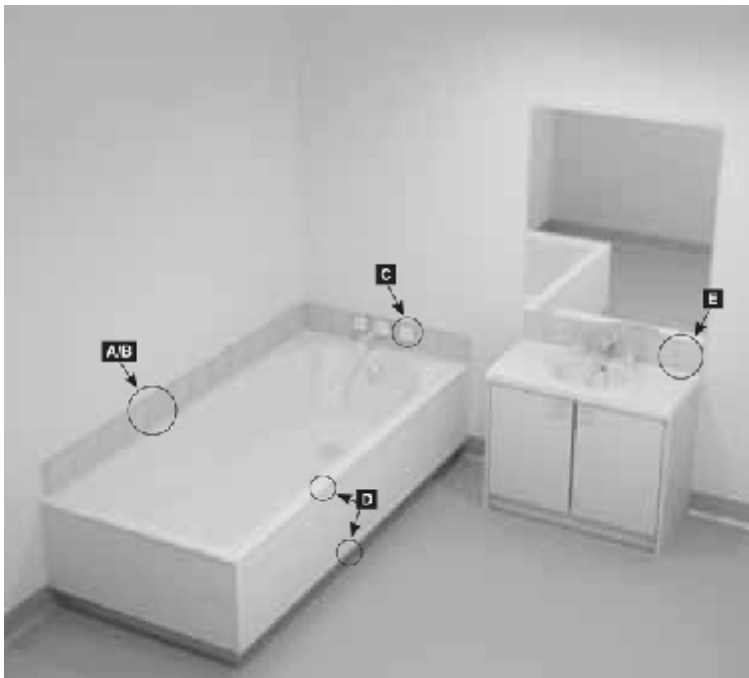
C Penetration Detail
Bath - Tiled Upstand GAW-DO15



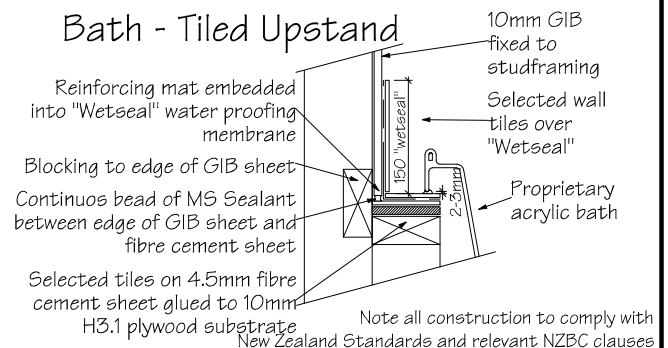
B Bath/Wall Detail
Bath - Tiled Upstand GAW-DO14



D Bath Plinth Detail
Bath - Tiled Upstand GAW-DO16

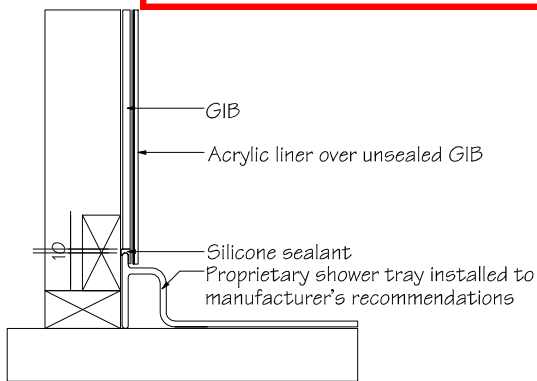


E Vanity Top Detail
Bath - Tiled Upstand GAW-DO17

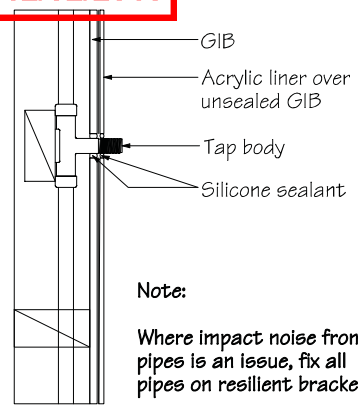


Note all construction to comply with New Zealand Standards and relevant NZBC clauses

					New Zealand Standards and Relevant NZPC clauses						
			Title			Bath - Tiled Upstand					
			Drawn.		Date	Chk.	Client				
			SC		14-08-09		Details				
			Sales	Plot Date	Scale @ A4						
			· HQ	30/03/2010	NTS						
Job Number			00								

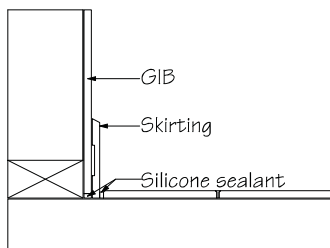


A Shower Wall/Tray Detail
Shower - Tiled Walls and Acrylic Base GAW-DO24

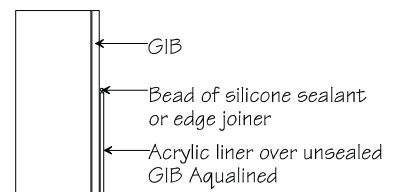


Note:
Where impact noise from pipes is an issue, fix all pipes on resilient brackets.

B Penetration Detail
Shower - Tiled Walls and Acrylic Base GAW-DO23



C Wall/Floor Detail
Shower - Tiled Walls and Acrylic Base GAW-DO29

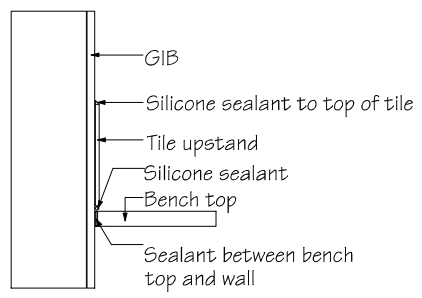


D Liner Top Detail
Shower - Acrylic Liner and Base GAW-DO30

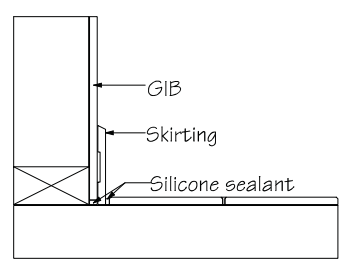


Note all construction to comply with
New Zealand Standards and relevant NZBC clauses

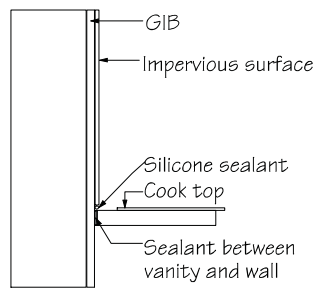
		Title Acrylic Shower				
		Drawn. SC	Date 14-08-09	Chk. H	Client Details	
		Sales H	Plot Date 30/03/2010	Scale @ A4 NTS		
		Job Number 00				



A Bench Top/Wall Detail
Kitchen and Laundry
GAW-D031



C Wall/Floor Detail
Kitchen and Laundry



B Cook Top/Wall Detail
Kitchen and Laundry
GAW-D032

Note:
See Wall Surfaces Surrounding
Cooktops on page 7 of Gib wet
area systems booklet.



Note all construction to comply with
New Zealand Standards and relevant NZBC clauses

		Title Kitchen & Laundry			Details
		Drawn.	Date	Chk.	
		SC	14-08-09		
		Sales	Plot Date	Scale @ A4	
		HQ	30/03/2010	NTS	
		Job Number		00	



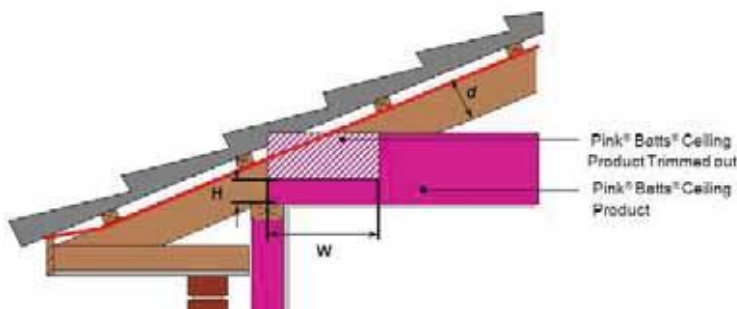
THERMAL INSULATION

Pitched Roof: Roof Underlay and Insulation Clearance

Option 2: Trim Product

The table below details the trimming required of the Pink® Batts® ceiling product located at the perimeter of the roof space.

Option 2: Trim Product



Pink® Batts® Ceiling Product			R 5.0	R 4.6	R 4.0	R 3.6	R 3.2	R 2.6	R 2.2	R 1.8
Pink® Batts® Ceiling Product Nominal Thickness (mm)			200	195	190	180	170	140	115	95
Pitch θ°	d (mm)	H (mm)	(mm)							
15	90	80	447	428	410	372	335	223	130	55
	140	132	254	235	216	179	142	30		
	190	184	61	42	23					
	240		No trimming required, product can be installed to the middle of the top plate and maintain a 25mm clearance							
	290									
20	90	87	310	296	283	255	228	145	77	22
	140	140	164	150	136	109	81			
	190	194	18	4						
	240		No trimming required, product can be installed to the middle of the top plate and maintain a 25mm clearance							
	290									
25	90	95	225	214	203	182	160	96	42	
	140	150	106	96	85	63	42			
	190		No trimming required, product can be installed to the middle of the top plate and maintain a 25mm clearance							
	240									
	290									
30	90	105	165	156	147	130	113	61	17	
	140	163	65	56	47	30	13			
	190		No trimming required, product can be installed to the middle of the top plate and maintain a 25mm clearance							
	240									
	290									

Note: This table is a guide only. The roof construction of each house may vary and the design should be checked on site to ensure the table is applicable.

TECHNICAL UPDATE

APPLICATION FOR CODE COMPLIANCE CERTIFICATE (Form 6)

Section 92. Building Act 2004.

1. What is the Building Consent? *Complete this field*

Building consent number:	
Issued by: (name of building consent authority)	

2. Who owns the building? *Complete all fields, using N/A if a field is not applicable*

Owner name:		Title: e.g. Mr, Mrs, Ms, Dr	
Contact person:			
Owner mailing address:			
Street address / registered office:			
Owner email address:			
Owner contact numbers:	Ph:	Cell:	
Are you using an Agent?	☐ Yes	☐ No	<i>If Yes, please also complete the following</i>
Who is the first point of contact for further correspondence?		☐ Agent	☐ Owner
Agent name:			
Agent email:			
Agent contact numbers:	Ph:	Cell:	
Agent mailing address:			
Relationship to owner:			

3. When was the building work completed? *Complete this field*

All building work to be carried out under the building consent specified on this form was completed on:	dd /mm / yyyy
---	---------------

4. Who completed the building work? *Complete all fields on each line. You will need to complete one line for each building practitioner. Use a separate sheet if necessary.*

The licensed building practitioner(s) who carried out/supervised the restricted building work is/are:			
Name:	Licensing class:	LBP or registration number:	Work carried out / supervised:

Name:	Licensing class:	LBP or registration number:	Work carried out / supervised:
Tradespeople who carried out building work other than restricted building work are as follows:			
Name:	Address:	Contact number:	Registration number:
The following specified systems are contained on the compliance schedule for the building and, in the opinion of the personnel who installed them, are capable of performing to the performance standards set out in the building consent:			

5. Declaration

☐ I understand that this application may *only* be made with the owner's approval. *Please tick to indicate your agreement.*

I request that you issue a code compliance certificate for this work under section 95 of the Building Act 2004. The code compliance certificate should be sent to:

☐ Owner ☐ Agent ☐ Owner address as per Section 2 ☐ Agent address as per Section 2

Name:	
Signature:	
Date:	

You can add a digital signature to this document, either using Adobe or your existing digital signature.

Once you have filled out the form, including signatures, please save the application to your computer. You can then submit the application with supporting documentation to your local Council.

If you are unsure about what information to include in your application, a guidance document is available ([click here](#)).

6. Have you attached all required documents?

You are required to provide all the necessary documents to support your application. This includes (but is not limited to) the following sections:

- *Memorandum of Licensed Building Practitioners – Record of Work (for each type of building work completed)*
- *Certificates relating to energy work*
- *Evidence that specified systems are capable of performing to the performance standards set out in the building consent (if changed from the building consent)*
- *Other documents from personnel who carried out the work.*

Refer to your building consent approval letter for a full list of documents required to support your Code Compliance Certificate application.